VOLUME 1 • OCTOBER 1959 • NUMBER 4

A.M.A. ARCHIVES OF GENERAL PSYCHIATRY

An Approach to Psychiatric Consultation in the General Hospital
Sheldon K. Schiff and Martin L. Pilot

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The Psychology of Schizophrenia
Harold A. Rashkis and Robert D. Singer

Behavioral Effects of Lysergic Acid Diethylamide (LSD-25)
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Lipid Factors in the Production of Encephalomalacia in the Chick
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Time Perspective and Intimacy
Cynthia Board, Jane King, and Anna Marie Tierney

Peripheral Thyroxine Metabolism in Patients with Psychiatric and Neurological Diseases
Seymour Reichlin

Clinical Status and Cerebrospinal Fluid "Total Neuraminic Acid"
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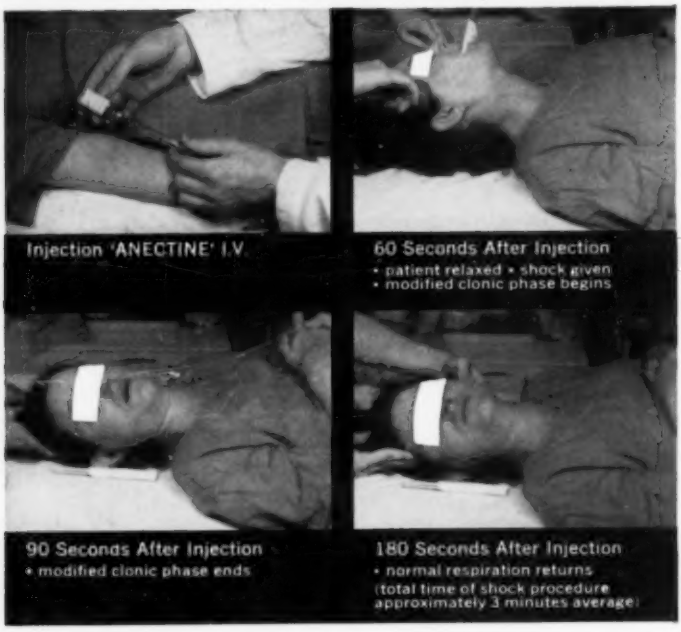
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Michael, K. D., and Wunderman, D. C.: J. Nerv. & Ment. Dis. *126*:535 (June) 1958.

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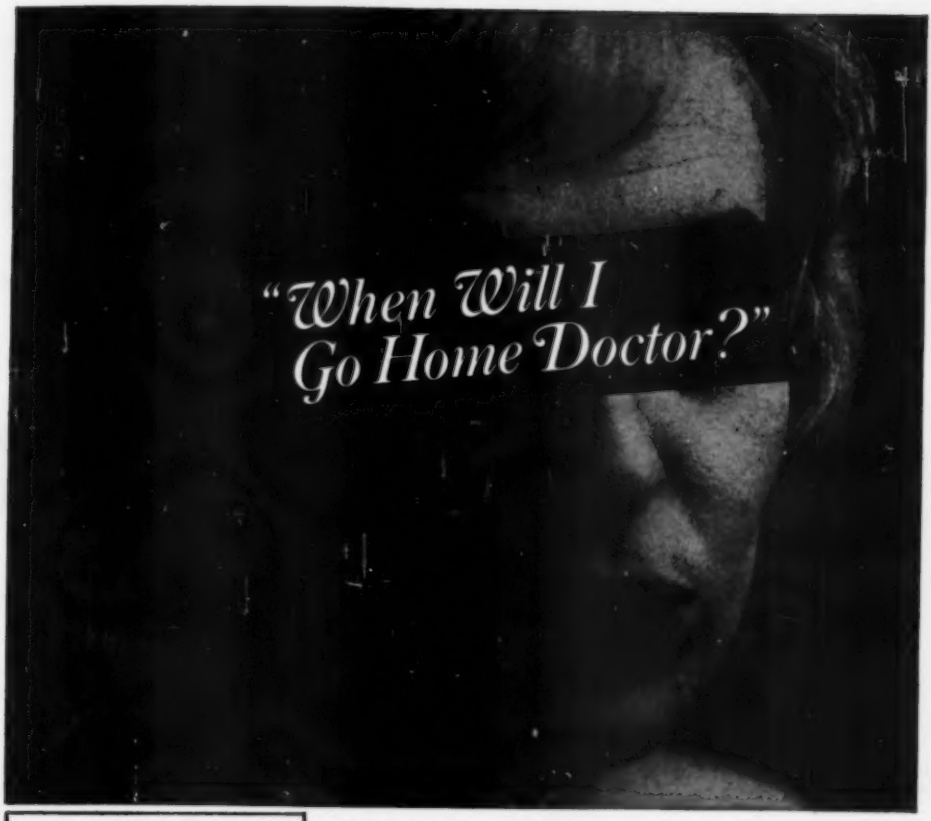

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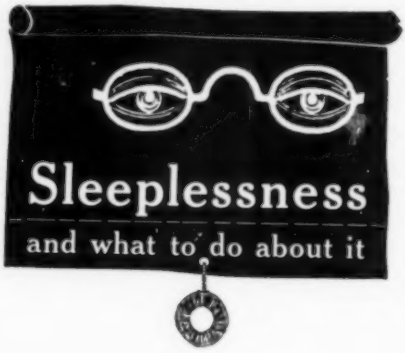

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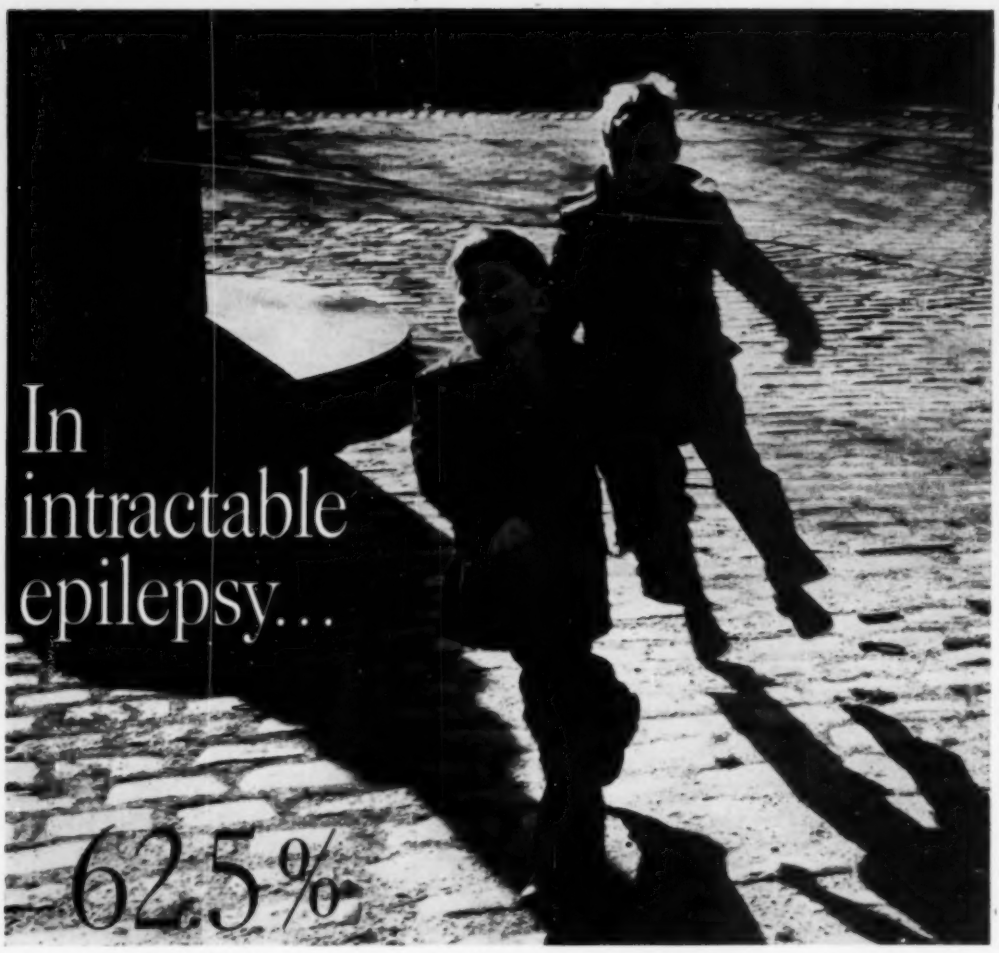

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An Approach to Psychiatric Consultation in the General Hospital

SHELDON K. SCHIFF, M.D., and MARTIN L. PILOT, M.D., New Haven, Conn.

The function of the psychiatric consultant is a problem that has received increasing attention in the past 15 years. Over this period psychiatric consultation has become much commoner in the operation of casework agencies, school programs, and other community organizations. In the general hospital setting the role of the psychiatric consultant has changed considerably. It has enlarged in scope and has become considerably more than a diagnostic or intermediary service prior to commitment. In the hospital a greater therapeutic function is expected of the consultant. With these changes have come many questions related to the altered role of the psychiatric consultant and to a clearer definition of the nature of the service he has to offer.

Fresh interest in the problems of psychiatric consultation is reflected in an enlarged literature which has appeared since World War II. The major contributors to this literature have been social workers and psychiatrists. The inspection of the psychiatric consultant's role in casework agencies and community organizations has received more critical examination than has his role in the general hospital. The difficulties that the psychiatric consultant faces in a general hospital have been discussed oftenest as another aspect of the problem of psychiatric education in a medical setting.[1,11-13,17,19] The psychiatric consultant's job appears to be viewed less from the vantage point of a specialized function and more as a lever with which to deal with the resistances of the house staff to psychiatric principles, to extend the house staff's understanding of these principles, and, in some cases, to "popularize" psychiatry.[5,16]

Several definitions of the role of the psychiatric consultant as seen by the consultee and the psychiatrist have been offered. Role definitions, as well as an examination of the consultation interaction, have been better developed in the social work literature.[2,4,10,14,18,21] One aspect of the consultant's role which concerns both the referring agency and the consultant is the demand for a clear differentiation between his role as a consultant and that as a therapist.[2,4,10,15] While this concern is voiced, the recognition of the consultee's anxieties as an important facet of the consultation is frequently discussed. Most observers express strong misgivings about any approach on the part of the consultant which might be construed by the consultee as "treatment." Some authors take the position of eschewing any approach to consultation other than one wholly patient-centered. Coleman,[6-8] on the other hand, presents a consultee-oriented

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Assistant Resident (Dr. Schiff). Assistant Clinical Professor, Department of Psychiatry, Yale University School of Medicine.

approach derived from experience in case-work agencies.

The question of which orientation is most applicable to the role of the psychiatric consultant in the general hospital has been dealt with by several authors.[3,9,16,17] Most have presented a primarily patient-centered approach.[9,16] Bibring[3] has discussed the consultant's role from a different position. She believes that the psychiatrist not only can contribute a diagnostic and therapeutic service to the patient but also can provide the referring physician with a valuable opportunity to increase his area of self-awareness. This, she suggests, may be accomplished by group discussion with house staff members, in which particular ways of functioning with a variety of patients are discussed, as well as by having personal interviews with individual house staff members. She has also discussed the way in which a patient's environment may be manipulated according to hypotheses derived from psychoanalytic concepts.

A request for psychiatric consultation by a member of the house staff of a general hospital is a request for a particular kind of help. Often the problem which is outlined in the request clearly represents the major concern of the consultee, having to do with the patient's care, management, and diagnosis. Frequently, however, despite the explicit statement of the consultee's difficulties, in what areas and for what reasons psychiatric aid is being sought is unclear. The reason expressed in the written consultation request may have little to do with what the consultant comes to see as the major problem. While the immediate focus of all consultation requests is the individual patient, in those instances in which the reasons seem unclear it may be useful to look at the consultee's implicit concerns. These are the concerns which, for many reasons, the referring house staff member may be unable to deal with directly, but which are seen to be important factors.

A useful approach to the problems of psychiatric consultation in the general hospital is one which is primarily consultee-oriented. The examination of the consultation request is made in a systematic fashion, in which the consultant views with importance the facts that the consultation request stems from a particular house staff member, in a certain manner, and from a specific background. That a consultation request is diffuse and unclear is seen to result from the consultee being unable to make the nature and complexity of his needs explicit. This is frequently a signal that he requires more assistance than when his needs are stated directly. Clearly, such referrals should not be dismissed as "poorly made consultation requests . . . poorly thought out."

The following cases offer illustrations of consultations from which this orientation will be discussed.

Report of Cases

CASE 1.—Following his night on duty, the psychiatric resident on emergency-room duty reported that he had been called to see an interesting case of a patient admitted with severe anginal symptoms, which seemed to have strong features of a conversion reaction. He described the appearance in the emergency room of a 51-year-old, married Negro male laborer, brought in by his wife and family, complaining severely of intense chest pain with radiation to the left arm. The patient feared these symptoms signified that he had just had a "heart attack." The psychiatric resident was notified because the emergency-room staff felt, after carefully examining the patient, evaluating his electrocardiogram, and reviewing his history and symptoms, that no organic basis for the patient's distress seemed likely. The psychiatric resident, while in the emergency room, elicited a history from the patient of similar episodes in the past, as well as an account of past and recent acute family problems. The patient noted that things looked so bad at home that he wondered whether his wife and family were going to continue contact with him. H was also greatly concerned over the possibility of an impending divorce. After some discussion between the psychiatric resident-on-call and the emergency-room staff, it was decided that, despite the general feeling that the patient's present difficulties were not organic, there was sufficient clinical doubt to merit more prolonged study, and the patient was admitted to the hospital. The suggestion was made by the psychiatric resident to both the patient and the

staff that further psychiatric consultation would be useful, and this was generally agreed upon.

When the consultant arrived on the ward to see the patient, the ward intern, who had formally filled out the consultation request, was very eager to discuss the case. He noted how much better the patient had been since admission and stated that he felt that this was due to the frequent and lengthy visits made to the patient by his wife and family. He went on to say that it was unfortunate that his resident and the attending physician could not see the "obvious" emotional nature of the patient's problem. He also felt that their persistent efforts to see some complex cardiovascular abnormality in the patient's symptoms and their recurrent and annoying demands for further work-up were indications of the "evils of an anti-psychiatric bias" among the house staff members. The medical resident came on the ward at this time and, after a brief introduction to the consultant, excused himself, stating that he was too busy at present to discuss the case. He added, as he left, that "anything you (the consultant) say will be O.K."

The patient was a good-looking, well-built Negro man, appearing younger than his stated age, who talked easily, cheerfully, and almost glibly of all the "good" the doctors had done for him. He stated that he was puzzled that a psychiatrist was called to see him, but that he was willing to go along with anything that might help. He related basically the same story of family discord, but added enthusiastically that those problems had been "pretty well straightened out" during this week of hospitalization. He and his wife had come to terms and were now primarily concerned with his return home. He thanked me for my interest but said that he saw little reason to seek any psychiatric aid.

In his note, the consultant concurred with the initial evaluation of the patient's present illness and noted that the aspect of secondary gain certainly had cardinal significance. However, he also discussed the fact that this patient might well have organic pathology, since the finding of cardiovascular disease and clear neurotic operations were not mutually exclusive.

Later that day, while on the ward, the medical resident approached the consultant, saying that he had read his note and was surprised. He stated that it seemed we were not at such opposite poles after all, and that he had been concerned over much the same things as those the consultant noted. He then spoke directly of his great discontent with the particular intern, mostly over what he considered shoddy, careless, and at times cavalier treatment of his patients. He felt that this intern was unwilling to pursue problems and was prone to dismiss them with the simplest diagnosis. He noted that on a previous admission the patient was thought to have functional urinary complaints, which, as a result of a more complete work-up, were seen to be related to an early pyelonephritis. While he and the attending physician had considered psychiatric intervention in this case, they were concerned that this would operate against a more complete examination for the patient. For this reason they were reluctant to acknowledge their concern about the patient's psychiatric status with the intern, in an effort to direct his efforts more specifically to the patient's possible cardiovascular problem. They had finally agreed to the intern's insistence that a psychiatric consultation be called, but continued to have misgivings about the outcome of the consultation because of these reasons.

Nothing more was heard of the patient following his discharge from the hospital. The intern involved abruptly terminated his internship two months later.

CASE 2.—An emergency psychiatric consultation was called for Mr. B., a 57-year-old, white, married, Catholic plumber foreman at a nearby factory, who had been admitted 15 days previously for hematemesis and acute midepigastric abdominal pain.

During an informal discussion with the ward staff the previous day, concerning another patient, it was casually mentioned that perhaps Mr. B. would make an "interesting case" because he appeared childish and was a difficult patient to manage, and in view of the fact that our service had expressed interest in seeing ulcer patients. The working diagnosis was peptic ulcer. It was arranged that the patient would be seen in the next 48 hours. The following day, in the afternoon, the consultant received an urgent request to see the patient because he was threatening to sign out of the hospital against medical advice. The staff was upset because they were worried that the patient might still be bleeding and because a definite diagnosis had not as yet been made. Whether or not the patient was still bleeding was difficult to determine, since the patient had refused to present any stools for occult blood examination for the last three days. The intern felt that the patient was petulant and infantile; he also felt, however, that the patient had been unreasonably upset by a talk with a gastrointestinal consultant the previous day, who had brought up "out of the blue" the question of carcinoma. At this time the intern also remarked the the patient had been refusing his food tray for the past five days, seemed "nervous," and that one night the patient had been seen calling his fellow workers at 2:00 a. m. (the patient worked the night shift) to see how things were going in his absence.

Review of the chart revealed many notes of interest. Over the initial six days of admission, the patient had been given 6 units of blood and had remained in bed, frequent blood pressure and pulse observations being recorded. During this time it is noted in the medical student's work-up, as well as in the nursing notes, that the patient was very cooperative.

On the eighth day of admission the nurses' notes reveal the patient's statement in the afternoon that "I'm tired of this hospital . . . I'd like to go home soon." That evening the patient told the nurse and medical student, again as recorded in the nurses' notes: "I don't care if I live or die." It was noted that the patient was very upset and refused his evening medication and meal. He continued to refuse his food trays after this evening, and on later occasions added comments that "this food is no damn good. . . . This hospital is no damn good." The medical staff decided to ignore this behavior, continued to present him his food and medication, and started him on meprobamate for his "nervousness." However, this regimen was not discussed with the patient.

On the 12th day of admission, the patient, for the first time, expressed his wish to sign out of the hospital, complaining that he was receiving poor treatment, poor food, and that he was getting sick of the place. During the period from the 8th to the 12th day the patient became increasingly provocative with the entire ward staff, was beginning to complain about venipunctures in the morning, and was refusing to present his stools for occult blood examination. The ward staff felt that the patient's talk about signing out of the hospital was a "childishly" empty threat, particularly in the face of his serious illness.

On the 14th day, the patient was seen by the gastrointestinal consultant, and the question of carcinoma was raised. Gastroscopy was advised, and the patient was told that an operation might be required. After this meeting the patient refused to sign for gastroscopy and informed the medical staff loudly and clearly that he was calling his wife to bring his clothes and that the next morning at 11:00 a. m. he would leave against medical advice. At this point an emergency psychiatric consultation was called.

The patient was seen a few hours later. He was seated at his bedside in a six-bed ward, choleric and frowning. He appeared to be an average-sized, corpulent man, whose initial response to my request to talk privately in an adjoining room was a loud, flat statement of refusal. If we were going to talk, it would have to be here or nowhere, because he had nothing private to say. His feeling about the hospital, the doctors, and the treatment he had received was common knowledge, and far from private. After a brief interchange, in which a concern was expressed over how things had reached a pass where he felt that he would rather leave the hospital very ill than continue being treated by the doctors, he quickly responded to a second request and joined the consultant in the next room.

He stated immediately that he hated the hospital, the staff, the food, and everything here and hoped he could blot out the entire experience. He would throw any pills "they" tried to give him in the gutter. He knew that the consultant was sent to convince him to stay, he said, but there was "no chance." After all, they told him he had an ulcer, then a tumor; now they're trying to tell him he has cancer. . . . "What is this anyway?" "What kind of hospital is this where they pay so little attention to you?" How could they let him turn away his food trays if he were so ill? After a while he said that he "guessed it wasn't just the hospital," but that in part his feeling had something to do with some personal troubles—particularly that he and his wife hadn't talked in over two years. At the conclusion of the interview, he stated that, while he felt very strongly about "keeping his word" on signing out against medical advice, perhaps he would "keep in touch." At this juncture, an appointment was made to see him the following morning before he left.

In the morning the patient appeared at the nurses' station, docile, wearing a sheepish grin, and informed the consultant that he was waiting for the dietitian to give him his diet and for the intern to give him his medication and medical clinic appointment.

In the interim, prior to his departure, the consultant discussed with the staff, particularly the patient's intern, what seemed to have gone wrong. How had an initially cooperative patient reached a position where he was leaving the hospital against medical advice? The intern at first spoke of the patient as an "impossible child" with whom anyone could lose patience. He went on to talk of his misgivings over the way he had behaved with the patient. He sadly questioned his handling of the patient's refusal to eat, accept medication, and produce stool specimens for examination. He voiced his uneasiness with the thought that he had been less than understanding with the patient, and possibly quite unprofessional. He finished with the statement that in any case Mr. B. was now the problem of whoever was unlucky enough to follow him in medical clinic, if he ever showed up again.

The consultant reviewing the case with the intern approached the patient's behavior in an attempt to explain why such provocativeness can be a desperate way to gain acceptance and gratification. Major emphasis was placed on the problem of how to get the patient back into the hospital. The

intern was encouraged to follow the patient. He was advised to make a specific time and date to see the patient as soon as possible.

Four days after his departure, Mr. B. was admitted from the medical clinic, where he stated that he had reconsidered what had happened and would like to complete his medical evaluation, including gastroscopic examination. In view of his previous remarks concerning the ward he had just left, the admitting clinic doctor offered to arrange his admission to another ward. The patient refused, stating that by all means he wished to return to the same ward. The patient remained three days without incident, cooperative and friendly. Gastroscopy was performed without incident. He was discharged with the diagnosis of peptic ulcer on medication, and diet and arrangements were made for him to be followed in the medical clinic.

CASE 3.—Mr. C. was a 65-year-old, white, widowed Italian, a retired carpenter, who was admitted to Grace-New Haven Community Hospital 15 days before the consultation request. The consultation request read: "Please see and evaluate this 65-year-old man with intractable abdominal pain . . . (?) psychogenic in origin."

During this period of hospitalization, the patient had received a complete evaluation for his pain, including detailed blood and x-ray studies, a gastrointestinal series, and fluoroscopy. Several consultants reviewed his case, but a definite diagnosis had not been reached.

The patient had been placed on an ulcer diet, narcotics for a brief time, non-narcotic analgesics, sedatives, tranquilizer, and sleeping medication. At one point, anticoagulants were given on the suspicion that his pain was a symptom of abdominal thrombophlebitis. Except with narcotic and, to a less extent, non-narcotic analgesics, no relief was obtained.

During this period of time the patient became increasingly difficult for the aides and the medical staff to tolerate on the ward. He made continuous demands for analgesics and persistent complaints that little was being done for him. Two or three days prior to consultation, the patient was seen to be crying in his room; he was turning his food away, stated he had no appetite, and was having difficulty in sleeping.

The resident who requested the consultation was new on the ward and said he was puzzled at what was happening with the patient. In view of the patient's recent behavior, he felt that it was probably a functional problem. He hoped the consultant would validate this. The resident related that psychiatric consultation had been deferred until this time because of the ward staff's reluctance to accept a psychiatric diagnosis. However, despite all their efforts, no positive diagnosis could be established. He noted that while an organic etiology was being pursued the staff had been able to view the patient's upset behavior sympathetically, but that now he was a patient to be avoided. He assured the consultant that as soon as he was willing to make a psychiatric diagnosis the patient could be discharged to the psychiatric clinic. The ward staff had done all they could.

The patient was a thin, tearful elderly man, who seemed older than his stated age. He remarked immediately that he "guessed they had sent a psychiatrist to break the bad news to him." The consultant responded that there was no evidence at this time that he had cancer, whereupon the patient began to cry.

He went on to talk of the three operations he had had in the past five years, and their unsatisfactory results (two operations for herniorraphy and a transurethral resection for benign prostatic hypertrophy). He was convinced that he had cancer, but that the doctors were not sharp enough to find it and take care of it. He went on to discuss his deep mistrust of doctors, which he had held ever since his wife died of multiple sclerosis, 18 years before. He recalled traveling from doctor to doctor with his wife in the early years of her illness, before a definite diagnosis was made, and being told that she was "nervous." He related bitterly the story of her five-year decline and noted that since her death, in 1940, he had been depressed. For the past 15 years he had been living with his married son, but felt that his behavior was becoming too much for the family to handle. He noted that for more than four years he had had crying spells and that his appetite was diminished; early-morning waking had become an increasing problem, and he frequently had trouble with constipation. Five years previously he once thought fleetingly of suicide; two years before he had wondered whether he could hang himself; and, while in the hospital he wondered at times whether, if he took the pills from the nurses' stand, he could then carry out the suicide quietly. However, he felt he was too cowardly and much too religious ever to go through with it. The possibility of the patient's coming to the psychiatric clinic was discussed, with the emphasis that it was not to be a substitute for continued medical supervision. The patient agreed to the plan, and an appointment was made. The consultant also discussed with the patient the prescription of a medication, iproniazid (Marsilid), which might be useful in this kind of trouble and, in addition, arranged to see him regularly.

In discussion with the medical resident who had made the referral, it quickly became evident that, while he was dismayed at not being aware of the profound depression this patient had, and of the latter's great fear of cancer, his primary concerns

were these: What do we say to him now? On what medicine shall we discharge him? In what way do we put our evaluation of his hospitalization to him? Will you take care of him at the clinic?

Shortly, a mutual agreement was reached that the patient should be seen in medical clinic, as well as in the psychiatric clinic, and be closely followed medically. It was agreed that, despite his profound depression, the nature and intensity of the patient's abdominal complaints warranted close study. The patient was later discovered to have an inoperable carcinoma of the pancreas and died soon after.

CASE 4.—Two days following admission, request for a psychiatric consultation was placed for the stated reason of "evaluating this patient with an involutional depression, who is here primarily for that purpose." Discussion with the medical staff on the ward revealed that they were unhappy that this patient was admitted to a medical ward specifically for psychiatric evaluation. They felt, however, that there was no question that the patient was depressed and disturbed and that they had seen her have many crying episodes on the ward in the short time she had been in the hospital. While they were certain that this case was clearly psychiatric, they did note, parenthetically, that the patient was also being followed for essential hypertension and colloid goiter. Neither of these conditions required medical treatment. Her blood pressure was moderately elevated, and she was found to be euthyroid.

The patient, at first meeting, presented herself as a short, stocky, pleasant-appearing, middle-aged Italian housewife, who appeared obviously depressed and whose attempt to present her difficulties was interrupted repeatedly by sobs. The patient had been seen at this hospital since 1929, at which time a nephrostomy had been performed for a possible ureteral stone. No stone was found at operation, and the diagnosis of "kinked ureter" was made. Since that time she had been seen intermittently at various clinics for a variety of complaints, including headache, low-back pain, palpitations, chest pain, feelings of weakness, and lack of energy. She was followed from 1940 to 1948 for "essential hypertension" and "goiter." During this period she had received digitalis, reserpine, strong iodine solution U. S. P. (Lugol's solution), phenobarbital, vitamins, dextro amphetamine U. S. P. (Dexedrine), and Tuinal (seconal and amobarbital sodium) tablets. In 1942 she was operated upon for a retroverted uterus, which was thought to have been causing the patient's low-back complaints. The patient experienced some moderate relief of these pains over the next two to three years.

The patient was not seen in clinics from 1948 to 1950 because, as she stated on her return in 1950, she was "fed up." During this time she was seen by a private practitioner, and the circumstances surrounding her return to the clinic are not known. From 1950 to her present admission, in 1958, the patient was seen with increasing frequency and regularity at various clinics. In these contacts she presented many of the complaints already noted, but with less intensity; and she was followed particularly for her fluctuating, elevated blood pressure (220/160 to 160/90) and thyroid status. In 1958 the patient saw one doctor continuously in the medical clinic who was becoming concerned over the amount of medication the patient was taking. (Prochlorperazine [Compazine], 5 mg. daily; chlorothiazide [Diuril], 500 mg. daily; thyroid ½ grain [30 mg.] daily; reserpine [Serpasil], 0.25 mg. b. i. d.; dextro amphetamine [Dexedrine], 5 mg. Spansule daily; seconal and amobarbital sodium [Tuinal] tablets, and occasional phenobarbital, 0.25 mg. tablets were prescribed.) He also recorded his feeling of increasing discomfort over what he saw as her "increasing emotional disturbance." After two emergency-room visits by the patient for what were noted to be "emotional complaints," the decision was made to hospitalize the patient for reevaluation.

The patient talked with great urgency about her fear of being hopelessly ill, particularly in view of all the medicine she needed to "keep going," as well as her concerns about getting older and becoming separated from her married sons, with whom she had always been close. She expressed some interest in psychiatric treatment. She denied suicidal thoughts; as the interview went on, the anger of the patient over many things predominated. Arrangements were made with the house staff to see the patient after the weekend, since the initial interview was on a Friday. In the discussion with the ward staff, the consultant concurred with their impressions and speculated with them upon the dynamics of the case, the possible precipitating events of this admission, and some of the very interesting facets of this case from a psychiatrist's point of view. The patient's willingness to come for psychiatric treatment was discussed with the staff, as well as the feeling that she represented some hopeful prognostic signs.

Monday, in the morning, the consultant received a call from the emergency room, stating that the patient was there, upset, crying, and demanding to see him. The ward was called, and the consultant was told that the patient had been discharged on Saturday morning, the morning following the initial interview with the patient. The medical staff, when consulted, said that they must have misunderstood the discussion but that the impression they got was that, since Mrs. D. seemed to impress the consultant so well prognostically, and since on Saturday morning rounds they had noticed some

improvement in her behavior already, they felt that they could give her an appointment to the psychiatric clinic and cut short her stay in the hospital without any ill effects. They discharged her on all her medications, so that they felt sure she would not get into trouble.

The patient did keep her psychiatric outpatient appointment for that week, entered into psychotherapy, and at present writing, eight months later, is doing very well.

Comment

In each of the cases presented, the stated reason for the consultation was not the referring physician's primary concern. The major difficulty was implicit and became evident only after careful scrutiny. In the first case the problem was one of an intense, highly personal conflict involving the intern and resident responsible for the patient's care. The resident's dismay with the intern's performance and the intern's disgruntlement and need to support a position of his own worth were among the crucial factors. The second case, in which an urgent request was made to stop an undiagnosed and untreated patient from leaving the hospital against medical advice, illustrates the manner in which the consultee's most disturbing concerns are presented implicitly. The dramatic, last-ditch effort to prevent this recalcitrant, provocative patient from leaving sharply focused the house staff's misgivings over its responsibility for the patient's action. Although the question of how to "talk the patient into staying" precipitated the request for help, the house staff's questioning of its response to such a patient reflected a more basic concern. The feelings this patient provoked in the house staff were discussed, and a rationale was offered for the patient's continued management in terms of both the patient's behavior and the staff's feelings. The recognition and discussion of these implicit concerns of the house staff were fundamental to the final outcome of this case and to the usefulness of the contact with the patient.

The explicit concern of the consultee in the third case over the possible psychogenic origin of the patient's intractable abdominal pain served to introduce the entire area of the patient's treatment, management, diagnosis, and disposition for consideration. The house staff members had reached an impasse in management, which had little to do with their medical capacities. They felt that, as a result of their inability to establish a diagnosis in a man whom their clinical intuition insisted had serious organic disease, they had failed. The patient's demanding, depressed, and accusing behavior dramatized their feeling of failure. This behavior helped to provoke the house staff's later attitude of annoyance and irritation. The house staff's denial of the patient's seriously depressed state was in part related to these feelings, as well as to its unspoken reluctance to "settle" for a psychiatric etiology and diagnosis. To provide a disposition for the patient which the staff felt was adequate and with which it could be comfortable in view of this situation was a problem of cardinal importance.

The last case illustrates the unhappy consequences of accepting the explicit reason for a consultation without adequately scrutinizing the implicit concerns. From the vantage point of the patient's course, the consultation might be regarded as fairly successful. The patient's need for psychiatric treatment was apparent to all. Referral for psychiatric treatment was successfully accomplished, and the patient has since shown marked improvement. However, the consultant's failure to recognize the house staff's annoyance at the patient's admission and its desire to discharge the patient as quickly as possible contributed to the patient's preemptory discharge, which, fortunately, had no serious consequences. In this instance, the consultant's reluctance to accept the house staff's lack of interest in what, to him, were interesting psychiatric problems, and his need to use the consultation to demonstrate his skills and usefulness, were the obstacles to the successful resolution of this patient's hospitalization.

The reasons a house staff member is unable to present his concerns in an explicit fashion have many determinants. Aside from any reasons of personal conflict, the hospital social structure often prohibits it. In the interests of hospital diplomacy, the referring physician may find it difficult to express his major source of concern, particularly when he is in disagreement with colleagues or superiors. This is best seen in the first case, in which the conflict between the resident and the intern was a matter of which both were actually aware and was a prominent factor in the consultation request. To have made this the explicit reason for the consultation was unthinkable in terms of house-staff etiquette, but that this conflict would become apparent in the course of the consultation was inevitable. The frequent difficulty of house staff members in being explicit is also a reflection of the hard realities of their overworked, overconferenced, and demanding schedules. In attempting to meet the demands of patients, superiors, laboratories, and other members of ward and hospital staff, there is little time and energy available to deal with the "problem cases" in an introspective fashion.

There are other problems the psychiatric consultant faces in the general hospital. The manner in which the house staff sees the psychiatrist as a member of the hospital community, as well as the way in which the psychiatrist sees his own position in this community, is extremely important in the consultation interaction. The real and anticipated communication difficulties existing between the psychiatric consultant and the house staff are often responsible for the consultation going awry. The elaboration of these difficulties is beyond the scope of this paper.

However, it appears that many of these difficulties are represented in the consultee's inability to make his major concerns explicit to the consultant. The consultant's first responsibility, then, is to clarify what the major problems of the consultee are and involves the formation of a different role concept for the psychiatrist. It is a concept which differs from any of the basic models of the physician-patient relationship he has heretofore experienced. It is not strictly "doing something to the patient," "telling the patient what to do," or "helping the patient to help himself."[20] Rather, it calls for his participation in an interaction in which the consultee's concerns and expectations are fundamental to the successful resolution of the process. The occasion and need to direct himself to the patient is not dismissed, although his efforts in this direction are seen to be incomplete at best in the absence of this prior resolution.

Questions are frequently raised as to whether this kind of involvement by the consultant constitutes "therapy." If the inability of the referring house staff member to state explicitly all of his concerns and anxieties pertinent to the problem is seen to be an indication of marked psychopathology, then any intervention directed at dealing with this inability would be "therapy." However, one can view this difficulty from quite another position. The individual physician able to identify and report explicitly the nature and source of his anxiety and concerns is certainly rare. This particular difficulty is a common one. It is not a signal for rapid referral for psychiatric treatment. On those rare occasions on which this difficulty coexists and is one expression of a serious personality disturbance, a more rapid awareness of such a situation can be gained.

This orientation provides an educational function. The questions asked of the referring physician are these: What is the problem? What is the nature of your concerns and needs in this case, and how do they participate with those of the patients? How can we successfully deal with this situation? How can we make some application of what we have learned about this kind of problem to similar problems seen in other patients?

The consultant's role as a teacher in this framework is less liable to the dangers of offering "captive therapy," the "get thee to a psychiatrist" insinuation, or the in-

culcation of unwanted theoretical, dynamic, and diagnostic constructs in the face of practical problems. It provides the consultee with the kind of knowledge that comes from working experience.

Summary

An approach to psychiatric consultation is presented which we have found to be useful in the general hospital.

It is based on a point of view which is primarily consultee-oriented rather than patient-oriented, and attempts to examine carefully the manner in which the consultation was requested and the background of each situation.

The assumption is made that every psychiatric consultation, if not every consultation, stems from the referring physician's concerns, of which the most cogent are frequently not explicitly stated.

Case histories are presented to illustrate the nature of the concerns not made explicit, how they may operate in the management of the patient, and how they have been dealt with by the consultant.

Department of Psychiatry, Yale University School of Medicine.

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Blood Glutathione and Eosinophil Levels and Hospital Adjustment Scale in Chronic Schizophrenia

Studies over Periods of Four to Eight Months

MARK D. ALTSCHULE, M.D.; STANLEY H. ELDRED, M.D.; LEWIS J. SHERMAN, Ph.D., and JOSEPH N. GIANCOLA, Waverley, Mass.

Eight chronic schizophrenic women have been transferred to a special research ward at the McLean Hospital during the past year; they have remained in this relatively stable environment for many months, receiving no special treatment but being subjected to clinical observation and to tests of different kinds. It is now possible to present data on seven of the patients so studied for periods of four to eight months; the eighth patient would not permit the taking of blood samples and is therefore not included in this study. The present report describes the findings with respect to clinical status, Hospital Adjustment Scale scores, blood eosinophil counts, and blood reduced-glutathione concentration.

Material and Methods

The blood eosinophil cells were counted at approximately weekly intervals, using the method previously described.[12] The blood samples used were taken from an antecubital vein at about the same time of day on each occasion; the cell counts were made by the same technician throughout the study.

In order to measure the blood reduced-glutathione content, 1 ml. of the venous blood was immediately transferred to a tube containing 4 ml. of iced metaphosphoric acid and 5 ml. of purified water U. S. P. (Previous work had shown that the use of phosphotungstic, phosphomolybdic, sulfosalicylic, or trichloroacetic acid was not satisfactory in the measurement of blood glutathione content.) The solution of metaphosphoric acid was made up fresh every three weeks. The blood and metaphosphoric acid solution were mixed gently and placed in ice until centrifuged. The mixture was centrifuged at 2,000 rpm for 10 minutes, after which 2 ml. of the supernatant was transferred to an iced 25 ml. Erlenmeyer flask. To this was added 2 drops of freshly made filtered 1% starch solution (kept in an iced brown-glass bottle) and 0.2 ml. of a freshly made 5% solution of potassium iodide, also kept iced. The titration was then carried out with iced potassium iodate solution.[1]

The Hospital Adjustment Scale (HAS) consists of 90 items which describe psychiatric patients' behavior.[2] Each of the statements may be marked as "true" or "not true" after a three- or four-week period of observation. The total score obtained from the HAS represents a quantitative estimate of the over-all hospital adjustment of psychiatric patients. In the present study, all patients were rated independently by three nurses every four weeks. The nurses were working at different hours, so that a picture of the patient's behavior throughout the 24 hours was obtained. The raters received an initial period of training with the Scale. The three ratings were pooled in order to increase the reliability of the measures; the mean of the three was used as the monthly HAS score in all analyses.

Clinical evaluations of each patient were made at the beginning and the end of the period of study. In addition, all patients were seen on daily ward rounds by the same physician, who also was responsible for the initial and the final evaluation.

Observations

CASE 1.—A 63-year-old college graduate, mother of three children, has been continuously hospitalized for the previous 21 years, with a diagnosis of schizophrenia, paranoid type. Lobotomy was performed 12 years prior to this study. Upon examination prior to transfer to the research ward, she was found to be phlegmatic, affectively flattened, almost mute, uninterested in herself and her environment, untidy, and frequently given to smearing feces. There was no evidence of hallucinations or delusions. Upon transfer to the research ward, she began to participate in group activities not previously available to her. About two weeks later

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From the Laboratories of Clinical Physiology and the Clinical Services, McLean Hospital.

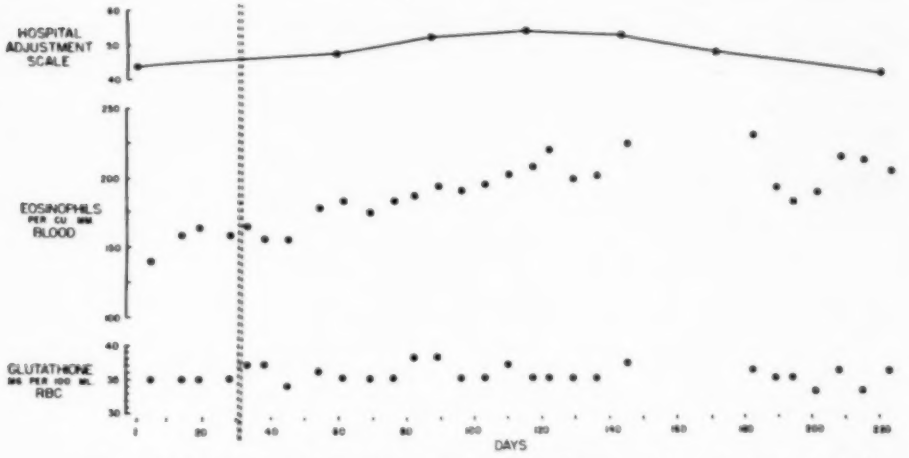

Fig. 1.—Findings in Case 1. The broken vertical line indicates transfer to the research ward on the 31st day of study.

she commenced to express bizarre delusions of influence and also described flamboyant hallucinations. Thereafter the clinical picture showed only minor variations during the rest of the study.

This patient's Hospital Adjustment Scale score was 44 before transfer to the research ward and ranged from 48 to 55 during the first 140 days of her stay on that ward; seven weeks later it was 43, after a series of small decrements (Fig. 1).

The blood glutathione level was measured 28 times and was constantly found to be between 33 and 38 mg. per 100 ml. of erythrocytes; on 25 occasions it was between 35 and 38 mg. (Fig. 1).

The blood eosinophil cell count rose from about 150 to about 190 per cubic millimeter (Fig. 1).

Case 2.—A 53-year-old single woman has been continuously hospitalized for the past 19 years, with the diagnosis of schizophrenia, paranoid type. Examination prior to transfer to the research ward revealed a markedly untidy, affectively flattened, preoccupied, gnome-like woman, who spoke sparingly in a barely audible, high-pitched whisper. She

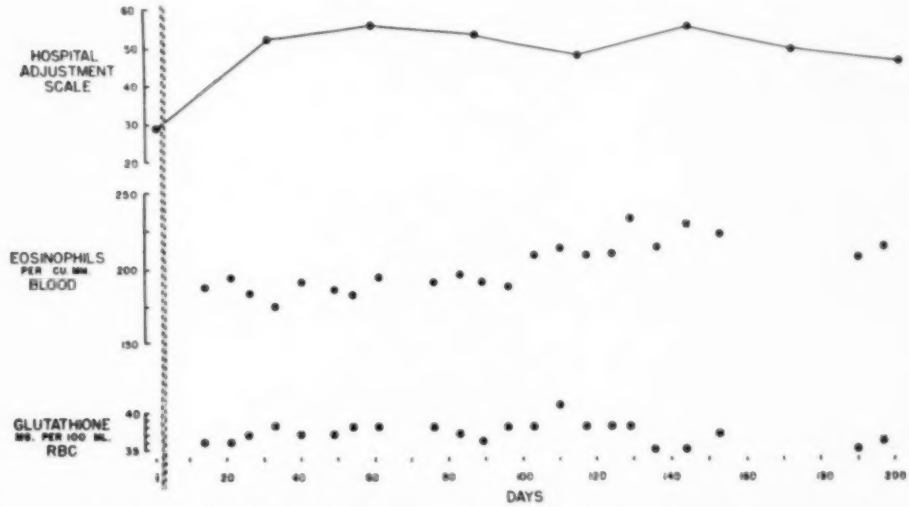

Fig. 2.—Findings in Case 2. The broken vertical line indicates transfer to the research ward on the third day of study.

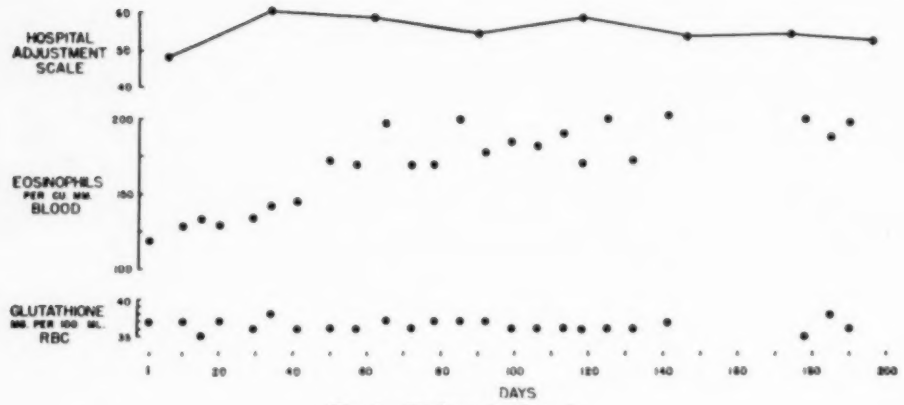

Fig. 3.—Findings in Case 3.

manifested no evidence of interest outside herself and was preoccupied with conserving her strength. There was no evidence of hallucinations or delusions. Except for the development of a persistently pleasanter demeanor and the transitory appearance of vague ideas of reference, there was no essential change in the patient's clinical picture during this period of study.

The patient's Hospital Adjustment Scale score was 29 before she was transferred to the research ward and rose after transfer; thereafter it ranged between 46 and 56 during the 200 days of study on this ward (Fig. 2).

The blood glutathione level was measured 22 times and was found to be between 35 and 41 mg. per 100 ml. of erythrocytes; it was between 35 and 39 mg. on 21 of the 22 measurements (Fig. 2).

The blood eosinophil cell counts were about 175 per cubic millimeter during the first 100 days and about 210 per cubic millimeter thereafter (Fig. 2).

Case 3.—A 48-year-old single woman has been overtly psychotic for the past 20 years and had been almost continously hospitalized for the past 18 years, with a diagnosis of schizophrenia, paranoid type. A bilateral prefrontal lobotomy was performed four years before the present study. Examination prior to the study revealed a tense, mildly hostile, aloof woman with many facial tics and repetitive finger and hand gestures. She was in excellent contact with reality and was able to talk

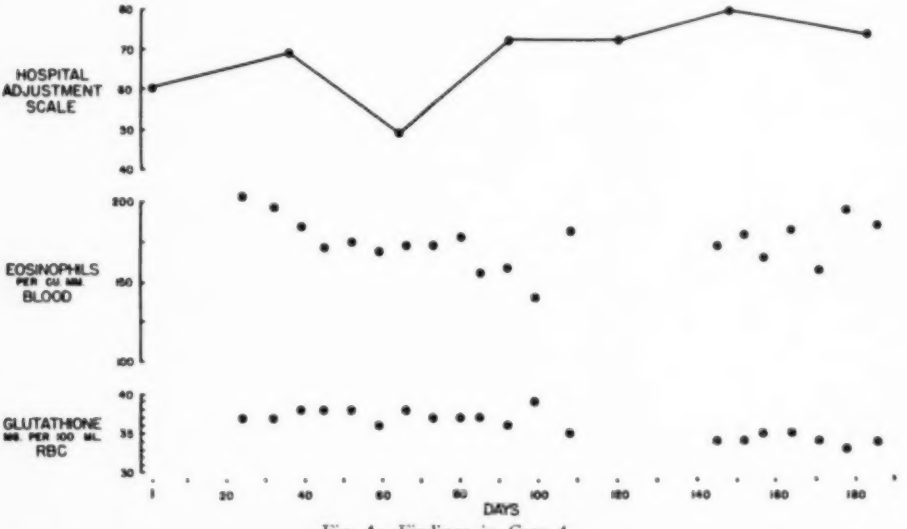

Fig. 4.—Findings in Case 4.

objectively about being bothered by the hallucinatory voices of unidentified malevolent people. Except for increased friendliness with the examiner, there was no clinical change over the period included in this study.

This patient's Hospital Adjustment Scale score was 48 initially and 60 a month later; thereafter it was between that level and 52 (Fig. 3).

The blood glutathione level was measured 24 times and was always found to be between 35 and 38 mg. per 100 ml. of erythrocytes; on 20 of the 24 occasions it was between 35 and 37 mg. (Fig. 3).

The blood eosinophil cell counts were approximately 125 per cubic millimeter initially and rose to about 175 on the 50th day of study, remaining at this level for the next 150 days (Fig. 3).

CASE 4.—A 55-year-old single woman has been hospitalized for most of the past 20 years, with the diagnosis of schizophrenia, simple type. A bilateral prefrontal lobotomy was performed 13 years before the present study. Examination prior to the study revealed a pouting, demanding, querulous, middle-aged woman, preoccupied with her bowels, and manifesting delusions of having syphilis and of being poisoned. During the period covered by this study she became more cheerful and more active socially and talked less about her somatic delusions. There was, nonetheless, no basic change in the clinical picture.

This patient's Hospital Adjustment Scale score was 60 initially and 69 a month later; it then fell significantly to 49 but rose again to its former range, remaining between 72 and 79 during the remaining 90 days of the study (Fig. 4). This patient showed a significant variation in scores during the course of the study when compared with the other patients.

The blood glutathione level was measured 20 times and was always found to be between 33 and 39 mg. per 100 ml. of erythrocytes. On 18 of the 20 occasions it was between 34 and 38 mg. (Fig. 4).

The blood eosinophil cell counts were approximately 200 per cubic millimeter initially and fell gradually to 175 per cubic millimeter a month later, at which level they remained for another month. The counts then fell to approximately 150 per cubic millimeter for a short time, returning thereafter to about 175 and then a little higher (Fig. 4).

CASE 5.—A 54-year-old single woman has been continuously hospitalized for the past 12 years, with the diagnosis of schizophrenia, paranoid type. A bilateral prefrontal lobotomy was performed eight years before the present study. Examination prior to the study revealed a very anxious, suspicious, haughty, verbally hostile woman, who had difficulty in staying in the room with the examiner, apparently because of his repeated incorporation into her persecutory delusional system. On subsequent examinations during the study period, she was less anxious and hostile, and only by indirect inference included the examiner in her delusional system. There was no significant change in the clinical picture during the period of study.

This patient's Hospital Adjustment Scale score was 67 initially and ranged between 68 and 60 during the first two months of study (Fig. 5). It fell to 56 on one occasion, a month later, but then returned to its former range, i. e., 72, remaining between that level and 65 during the last 10 weeks of study (Fig. 5). Except for this one moderate

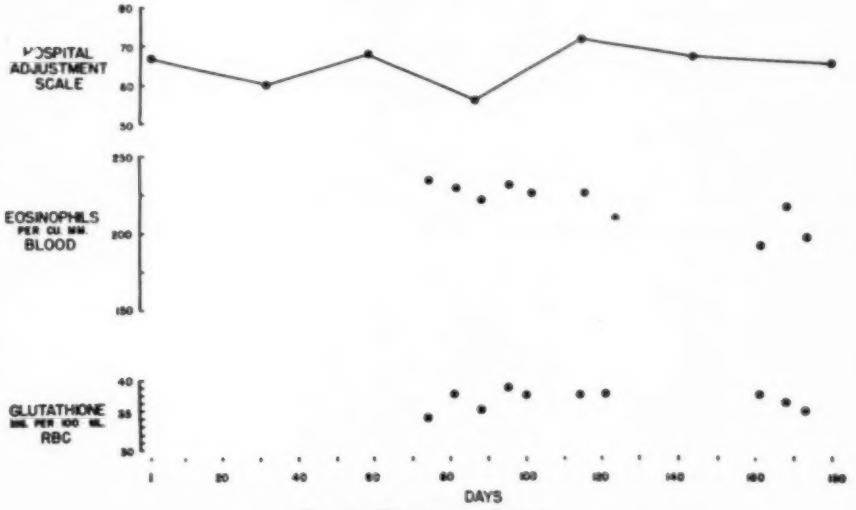

Fig. 5.—Findings in Case 5.

variation, there was no change in this patient's scores during the study.

The blood glutathione level was measured 10 times over a period of 100 days and was always found to be between 35 and 39 mg. per 100 ml. of erythrocytes (Fig. 5).

The blood eosinophil cell counts were approximately 225 per cubic millimeter for most of the period of study (Fig. 5).

CASE 6.—A 36-year-old single, ex-professional woman has been hospitalized for the past five years, with a diagnosis of schizophrenia, paranoid type. Examination prior to transfer to the research ward revealed a restless, hostile, disheveled, obese woman, who spoke in monosyllables except when expressing delusions of persecution. After transfer to the research ward she became less overtly hostile, but more openly delusional. There were no other significant clinical changes during this period of study.

The patient's Hospital Adjustment Scale score was 53 initially. It was 60 when she was transferred to the research ward, and thereafter the scores were 54 and 65, respectively, on the two occasions when measured (Fig. 6).

The blood glutathione level was measured nine times and lay between 32 and 39 mg. per 100 ml. of erythrocytes; the value of 39 mg. was checked a day later and a value of 35 mg. obtained. All values except for the one of 39 mg. lay between 32 and 36 mg. per 100 ml. of erythrocytes (Fig. 6).

The blood eosinophil cell counts were in the neighborhood of 160 per cubic millimeter throughout the study (Fig. 6).

CASE 7.—A 51-year-old woman has been psychotic for 30 years and has been continuously hospitalized for six years, with a diagnosis of schizophrenia, catatonic type. A prefrontal lobotomy was performed 11 years before the present study. When interviewed, immediately prior to transfer to the research ward, she was an untidily dressed, angry, suspicious woman, demanding repeatedly to be released from the hospital, with no evident awareness of mental illness. She recounted a bizarre, delusional story about her admission to the hospital and her subsequent course here. During four months of residence on the research ward, the clinical changes were as follows: decreased expression of hostility; the development of an interest in taking care of an aged patient on the ward, and some increased capacity to socialize with other patients. She continued to verbalize the bizarre delusional material, to request discharge from the hospital, and to deny that she was mentally ill.

The patient's Hospital Adjustment Scale score was 65 initially, and was 70 after she had been on the research ward for about a month. Thereafter it was between that level and 65, except for one occasion, when it was 59 (Fig. 7).

The blood glutathione concentration was measured on 16 occasions. It lay between 32 and 38 mg. per 100 ml. of erythrocytes; on 15 of the 16

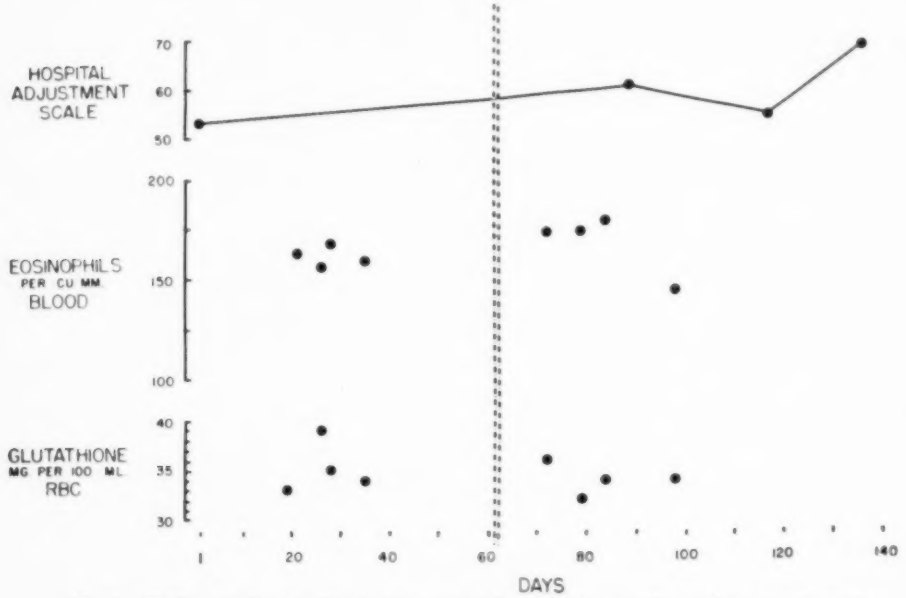

Fig. 6.—Findings in Case 6. The broken vertical line indicates transfer to the research ward on the 61st day of study.

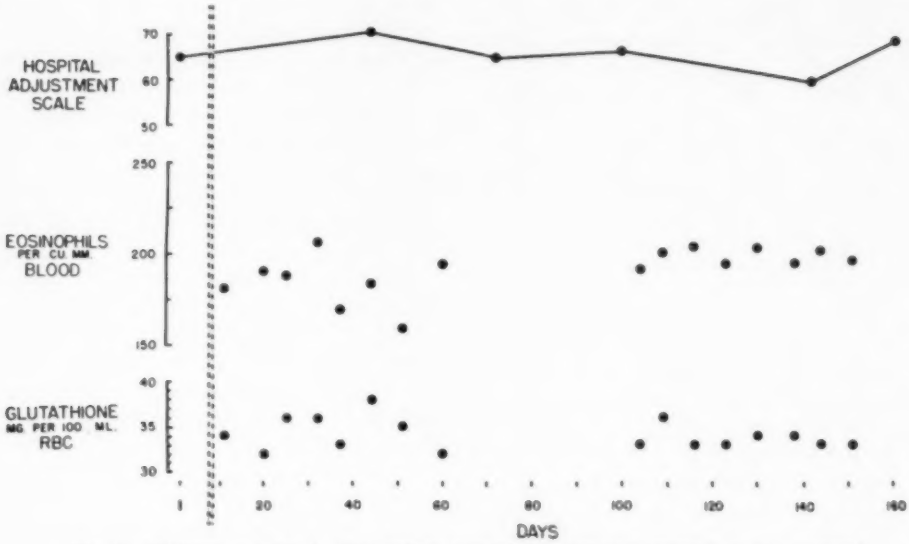

Fig. 7.—Findings in Case 7. The broken vertical line indicates transfer to the research ward on the eighth day of study.

occasions it was between 32 and 36 mg. per 100 ml. of erythrocytes (Fig. 7).

The blood esinophil cell count initially fluctuated between 120 and 200 per cubic millimeter and thereafter was around 190 per cubic millimeter (Fig. 7).

Comment

None of the seven patients included in the present study manifested major alterations in their clinical pictures. Even though they all became somewhat less hostile and more active socially, and, in three instances, more openly delusional, these changes were not of sufficient magnitude to warrant a change in diagnosis or living situation.

On only 3 out of 36 monthly comparisons was there a change in HAS scores of more than 12 points for the patients on the research ward (Table 1, Fig. 8). (One patient, Case 2 [Fig. 2], showed a significant rise on being transferred to the ward.) Case 4 (Fig. 4) showed a fall of 20, followed by a rise of 23 from the second to the fourth ratings; and Case 5 (Fig. 5), a rise of 16 from the fourth to the fifth evaluation. In all other instances the hospital behavior of the patients as indicated by their HAS scores was remarkably stable.

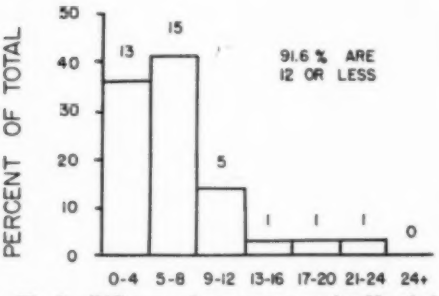

Fig. 8.—Differences between consecutive Hospital Adjustment Scale (HAS) scores. The numbers over each column indicate the number of differences in each category indicated below; the height of the column indicates the per cent of the total in each category.

TABLE 1.—*Distribution of Changes in Consecutive HAS Scores for All Patients on Research Ward*

Change in Scores	Frequency	Per Cent
0- 4	13	36
5- 8	15	41
9-12	5	14
13-16	1	3
17-20	1	3
21-24	1	3

TABLE 2.—*Number of HAS Ratings and Range of Scores for Each Patient on Research Ward*

Case	No. of Ratings	Range of Scores	Difference
2	7	46-56	10
3	8	48-60	12
5	7	56-72	16
1	6	43-55	12
4	7	49-79	30
7	5	59-70	11
6	3	54-65	11

This over-all stability with respect to HAS scores is also found in the individual analysis of each patient's total range of HAS scores: Only Case 4 showed any appreciable change (Table 2); she showed a 30-point difference, while the average difference for all others was only 12, with a range of from 10 to 16. Although no published data on repeated HAS ratings exist, it is evident from an inspection of the data that, except for Case 4 (Fig. 4), the clinical course of the patients as measured by their HAS scores showed little variation over the four- to eight-month study period.

Statistically significant changes in blood eosinophil cell counts occurred in all the cases except Case 5. However, they were too small to be considered functionally significant. The small changes in eosinophil cell counts could not be correlated with the small changes in Hospital Adjustment Scale scores that occurred: Thus, although Case 3 showed small rises in both at about the same time, Case 2 and Case 1 showed small rises in the former, while the latter remained unchanged; and in Case 5 (Fig. 5) small decreases in both Hospital Adjustment Scale scores and eosinophil cell counts occurred together, but the latter continued to fall when the former returned to its earlier level. Only in Case 4 (Fig. 4) did a significant change in Hospital Adjustment Scale score occur, and in this instance there was no change in the blood eosinophil count. This discrepancy between the laboratory and the behavioral findings is reminiscent of the results of an earlier study made here,[3] which showed no biochemical improvement in patients who improved clinically (but not enough to leave the hospital) while taking tranquilizing drugs. Observations of this sort raise the question whether the biochemical or the behavioral status of a patient indicates the severity of schizophrenia; this question cannot, of course, be answered here. The fact that schizophrenic patients can learn nonpsychotic behavior to some extent does not provide evidence on which to base an answer to the question.

It is worthy of note that the blood glutathione level showed only minor variability during long periods of study. The marked variations found by Barak et al.[4] were not evident here. All the values in the present study were in or below the lower normal range, unlike the values reported by Easterday et al.,[5] which were normal. Perhaps the discrepancies are due to the methods used: For example, both these groups of

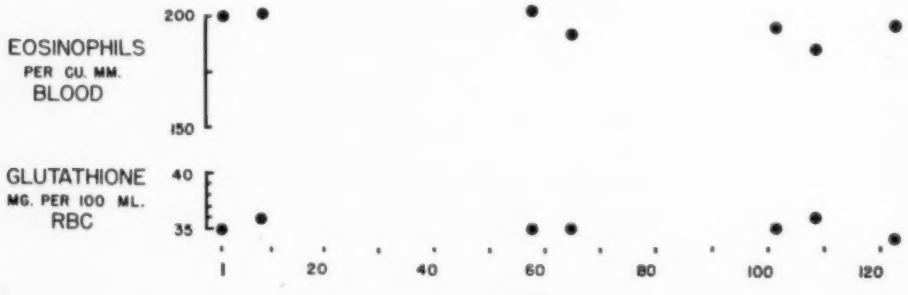

Fig. 9.—Findings in Case N.

authors used protein precipitants found unsatisfactory here a decade ago. It is possible that the narrow range of values found here in each case was due to the frequency and regularity with which the tests were done. However, in one patient not included in this report, studied infrequently and irregularly (Case N, Fig. 9), the variations were also small. The stability of the glutathione level in mental disease suggests that this may be a valuable index of change; it was noted several years ago that some patients show a rise with remission of the illness, but many leave the hospital chemically improved but with levels still in the low normal range.[6] On the other hand, the value of the test is diminished greatly by the fact that it is nonspecific; low values are found in the aged,[7] in diabetes,[8] in liver disease,[9] in pernicious anemia,[10] and probably in malnutrition,[9] as well as in schizophrenia and affected psychoses. Moreover, temporary increases may occur after injections of epinephrine or ACTH,[1] suggesting that patients might show misleading rises when greatly excited. Indeed, Persky[11] has shown in normal men that the blood reduced-glutathione concentration rises above the control level four hours after exposure to stress and falls to about 20% below the control level eight hours later, showing a total variation of 25% or 30% about the initial level.

Nevertheless, the data of the present study indicate that it is possible to maintain a group of schizophrenic patients in a fairly steady state, by whatever tests the state is evaluated.

Summary and Conclusions

Studies of blood glutathione and eosinophil levels, of the Hospital Adjustment Scale, and of clinical status in seven schizophrenic patients on a research ward for four to eight months showed that such patients may remain in a relatively stable state for many months. The present study provides data on the variability of the parameters measured under the conditions of the study.

McLean Hospital.

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Metabolic Studies in Childhood Schizophrenia

Effects of Tryptophan Loading on Indole Excretion

CHARLES R. SHAW, M.D.; JOHN LUCAS, Ph.D., and RALPH D. RABINOVITCH, M.D., Northville, Mich.

It has been 25 years since schizophrenia was first described in children.[1] The entity of childhood schizophrenia is now well established, and there is a large literature on the subject. The relationship between the adult and the childhood form of the disease was considerably clarified by Bender's follow-up studies [2,3] on a group of 143 schizophrenic children; she found that 89% of these children were considered by independent observers to have schizophrenia when examined in adulthood. Further clarification of this relationship occurs in the similarity between what has been called the core pathology of childhood schizophrenia, i. e., dysidentity,[4] and Federn's description [5] of the fundamental psychopathology of adult schizophrenia as an ego defect, with loss of ego boundaries and a failure to differentiate the self from the external world.

Federn believes that the ego is more than a concept, that the familiar experience of ego feeling is proof of the ego's existence, and that it is ego feeling which enables one to differentiate between himself and the outer, objective world. Thus, the ego boundaries take on the function of a sensory organ.

Freeman et al.[6] likewise consider the "basic disturbance" in schizophrenia to be a defect of "ego feeling, or the inability to differentiate self from environment . . . thus leading to the patient's experiencing internal and external sensations as a continuum." They feel that "once this basic disturbance is appreciated, all other schizophrenic manifestations can be viewed as necessary elaborations of it."

Rabinovitch [4] has outlined a formulation of the psychopathology of childhood schizophrenia derived from his case studies. He notes that, as in adults, schizophrenic children may present a multiplicity of symptoms, which vary with age of onset, the child's developmental level, and the nature of his particular defense mechanisms. Rabinovitch states:

> There is one symptom, however, common to all cases, a core disturbance present regardless of divergent behavioral manifestations and pathognomonic to the illness. This is the child's inability to experience a clear-cut percept and to appreciate with clarity the reality of identities, boundaries and limits. Experiencing subjectively no clear-cut limit to his boundaries, it is as though the child merges diffusely with the objects in his environment.

It is not yet finally certain whether childhood schizophrenia is a special type of schizophrenia or whether it represents merely an earlier or severer form of simple adult schizophrenia. Resolution of this issue must await further studies along the lines of familial patterns, physical and chemical evaluations, and continued longitudinal clinical and sociological studies. Nevertheless, as more and more information is being accumulated, it appears highly likely that the basic disorder is the same whether it occurs in children or in adults.

While children are, in many ways, difficult experimental subjects, there are certain advantages to studying them in preference to adults in metabolic studies of schizophrenia. First of all, studying children may help to clarify the cause-effect relationships: When metabolic abnormalities are found in adult schizophrenics, one is never certain whether the findings are an integral part of the schizophrenic disorder or whether they are the result of the long-term schizophrenic functioning. While the demonstration of positive findings in schizophrenic

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children by no means definitely clarifies the cause-effect relationship, the absence of such findings in children and their presence in adults would be a strong indication that the chemical changes are secondary to the schizophrenia. Another advantage of studying the disease in childhood is that a somewhat more valid control group is available. Schizophrenic and nonschizophrenic child patients are generally similar in their nutritional status, amount of physical activity, and general patterns of daily living. This has not been the case in many of the reported studies in adults. The schizophrenic children in the present study, as well as the nonschizophrenic ones, participated in all the usual activities of the institution, such as school, crafts, and social and recreational activities; and the dietary intake of the two groups by actual recording is very similar. A third advantage, and one which will be reported in subsequent work, is that the families of schizophrenic children are usually available for study, and, what is additionally important, they are usually interested and willing to participate in such studies.

Much interest has centered around the study of serotonin and other indole metabolites in schizophrenia. This has followed the suggestion by Shaw and Woolley [7] that the cerebral serotonin content plays a role in mental disorders, the demonstration by Hoffer et al.[8] of the hallucinogenic properties of an indolic epinephrine oxidation product, and the findings of Pletscher, Brodie, and Shore [9] which indicate that reserpine action in the brain is mediated through release of serotonin from the bound state in the cell. In an attempt to elucidate the possible alterations in indole metabolism in schizophrenics, several investigators have administered large amounts of tryptophan and then studied the changes in various tryptophan metabolites in body fluids. Lauer et al.[10] administered L-tryptophan in doses of the order of 3 gm. and then determined excretion of 5-hydroxyindoleacetic acid (5-HIAA) at two and one-half and five hours, respectively, following tryptophan administration. The 5-HIAA is the major end-product of serotonin metabolism. They found that the excretion of this metabolic product was increased twofold in the nonschizophrenic subjects, while remaining essentially unchanged in the schizophrenics. Banerjee and Agarwal [11] obtained the opposite results in a 24-hour tryptophan-loading test. They administered 5 gm. of DL-tryptophan and collected 24-hour urine specimens. In the nonschizophrenics the 5-HIAA excretion was not significantly altered, while in the schizophrenic subjects it was more than doubled. Buscaino and Stefanachi [12] injected 15 mg. of serotonin-creatinine sulfate into a large group of schizophrenic and control subjects. They recovered an average of 25% of the injected serotonin as 5-HIAA in the urine of the nonschizophrenic subjects and an average of 42% in the urine of the schizophrenics. These investigators noted briefly that in an unpublished study of urinary excretion of 5-HIAA after injection of L-tryptophan there occurred "increases in some cases."

Procedure

The subjects in this experiment consisted of 21 children, 11 of whom were diagnosed as having childhood schizophrenia, while the other 10 were nonschizophrenic with various diagnoses, including primary reading disability and psychoneurosis, and one normal sibling of a schizophrenic patient. Some subjects were inpatients, and others were being seen regularly in the outpatient clinic. The mean age of the schizophrenic group was 10.3 years, and that of the nonschizophrenic group, 10.6 years. They were under the continuous supervision of trained personnel, and dietary intake was recorded throughout the period of study.

The experiment consisted of a 24-hour control period and a 24-hour tryptophan-load period. Each period began at 9:00 p. m. At this time the subject's bladder was emptied, and he was then given a glass of fruit juice either with or without 3 gm. of L-tryptophan, followed by one glass of water. All urine was collected for the subsequent 24 hours and divided into four separate specimens: The first specimen consisted of the first 10 hours' excretion; the second specimen was for the 10- to 15-hour period, the third specimen for the 15- to 19-hour period, and the fourth specimen for the 19- to 24-hour period.

Side-effects from this dose of tryptophan were observed in several of the children. These were more prominent in the schizophrenics, and consisted of exaggerated, bizarre behavior with apparent subjective effects, as evidenced by increased anxiety, fearfulness, motility, and resistance to control. Sutton[38] has reported transient behavioral changes in two normal children given slightly larger doses of tryptophan; these children were described by their mothers as being "not themselves," and were restless, ill tempered, and negative.

Determinations for 5-HIAA were carried out on each urine specimen according to the method of Udenfriend et al.[14] In cases in which the determination could not be carried out immediately, aliquots were taken and stored in the freezer at —10 C, and were run within 48 hours.

Results

All but three of the subjects excreted increased quantities of 5-HIAA after tryptophan loading. In two of the schizophrenic and in one of the nonschizophrenic subjects the excretion was decreased.

There were no significant differences between the schizophrenic and the nonschizophrenic subjects either in the amount of 5-HIAA excreted before tryptophan loading or in the amount of increase following tryptophan loading at any of the time intervals. In the 10-hour specimens, the total mean increase in excretion in the nonschizophrenic subjects was 0.98 mg.

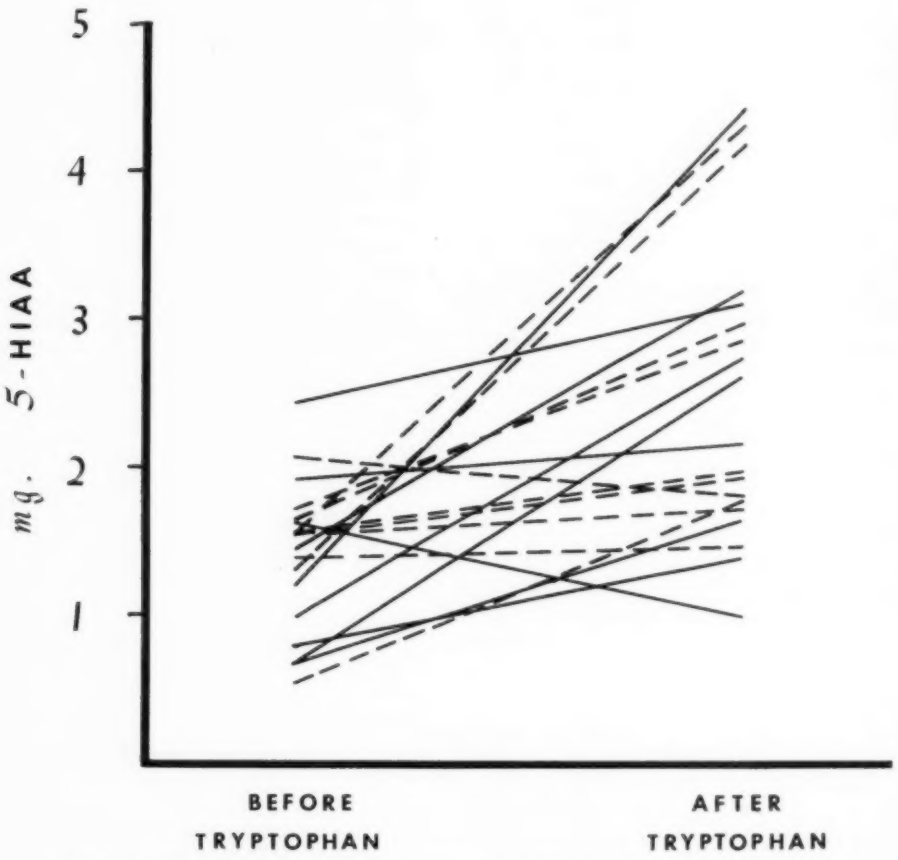

Fig. 1.—Mean total 10-hour urinary excretion of 5-HIAA before and after tryptophan loading in schizophrenic (solid line) and nonschizophrenic (broken line) subjects.

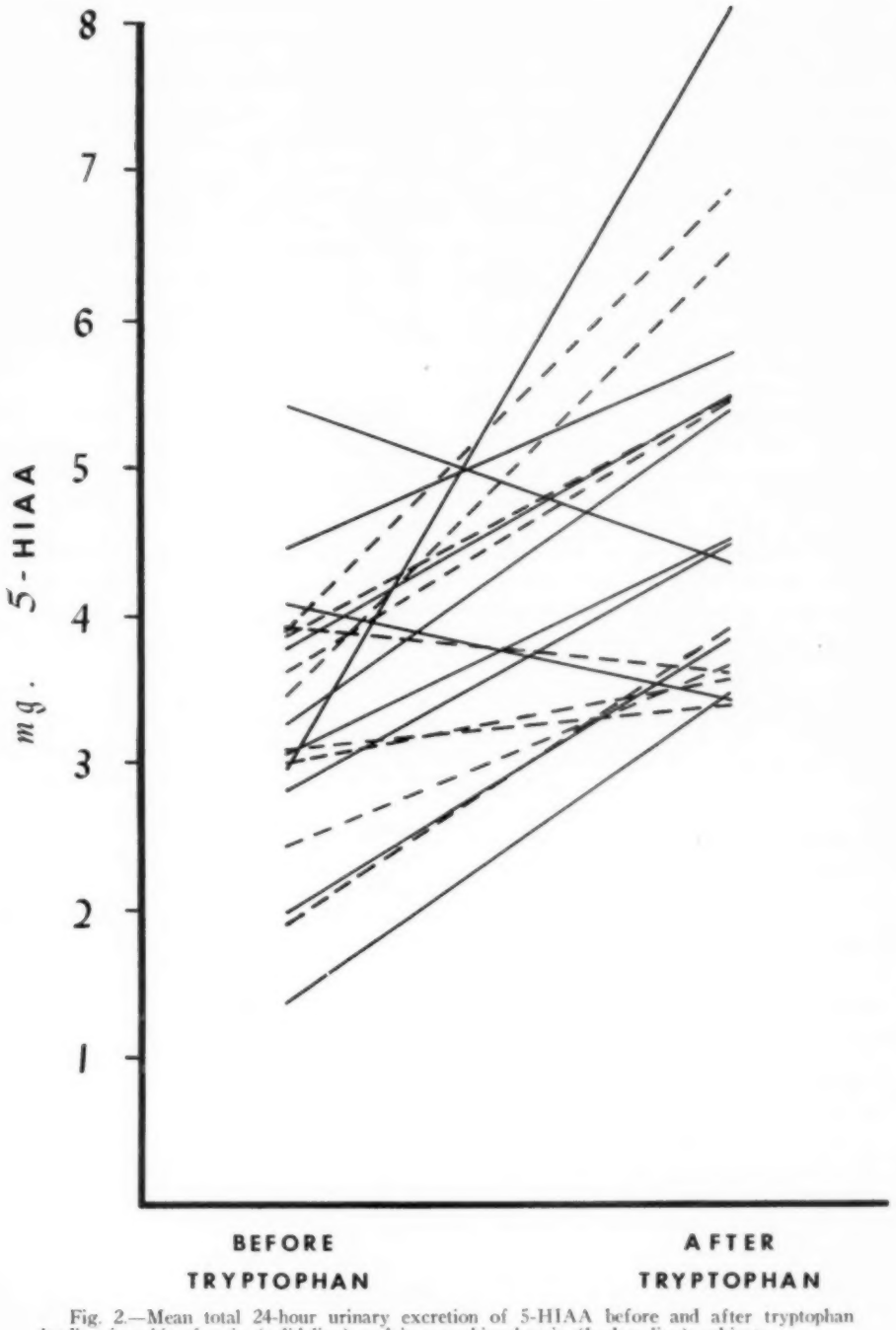

Fig. 2.—Mean total 24-hour urinary excretion of 5-HIAA before and after tryptophan loading in schizophrenic (solid line) and in nonschizophrenic (broken line) subjects.

(S. D. ±1.03), while in the schizophrenic subjects the mean was 1.21 mg. (S. D. ±1.01). In the total 24-hour specimens, the mean increase in excretion was 1.43 mg. (S. D. ±1.04) in the nonschizophrenics, while in the schizophrenics it was 1.17 mg. (S. D. ±1.81). These results are shown for each subject for the 10-hour and total 24-hour specimens in Figures 1 and 2.

It is of some interest to compare actual amounts of 5-HIAA excreted in children and in adults. As shown in Figure 2, the range of 24-hour urinary outputs in our group of children is from 1.4 to 5.5 mg. Sutton reports approximately the same order of output in a smaller group of normal children. These results are somewhat lower than those reported for adults by Banerjee and Agarwal; they found a mean 24-hour output of 7.59 mg. in their nonschizophrenic subjects and of 17.2 mg. in their schizophrenic subjects. Buscaino and Stefanachi report in 18 normal adult subjects a mean 24-hour output of 5.15 mg. of 5-HIAA, with a standard deviation of ±2.52.

Comment

In view of the conflicting results reported in the literature, together with the finding in the present study that schizophrenic and nonschizophrenic children did not differ in the excretion of 5-HIAA following tryptophan loading, it would seem that if there are any aberrations in 5-hydroxyindole metabolism, other methods will be required to demonstrate them. Some of the earlier support for the theory of serotonin imbalance in mental disease has recently been abrogated by the demonstration that it is probably not serotonin, but a catecholamine, perhaps norepinephrine, which mediates the central action of reserpine.[18]

Certainly, the present studies by no means exclude the possibility that altered metabolism of indoles occurs in the brain in schizophrenia. Only a small amount of ingested tryptophan is metabolized through the 5-hydroxyindole pathway, and of this only a small proportion occurs in brain metabolism. Thus, unless there is quantitatively a very great alteration in brain 5-HT metabolism, or unless this alteration also occurs elsewhere in the body, as in intestinal carcinoid, it is not likely that a method such as the present one will demonstrate any abnormalities. Several reports have appeared indicating that small amounts of abnormal metabolites may occur in schizophrenic subjects, and work is being presently done in this laboratory in an attempt to demonstrate such compounds by chromatographic methods.

Summary

Childhood and adult schizophrenia are compared. Because the basic psychopathology is the same, and because Bender's long-term follow-up studies have shown that most child schizophrenics remain schizophrenic into adulthood, it is concluded that the basic disorder is probably the same no matter at what age it first appears.

The advantages of using children as subjects for the study of metabolic abnormalities in schizophrenia are that (1) a better control group is available, and (2) cause-effect relationships may be clarified, since the subjects have had less time to develop changes secondary to the schizophrenic process.

Eleven schizophrenic and ten nonschizophrenic children were given 3 gm. of oral L-tryptophan, and urines were collected at 10, 15, 19, and 24 hours. All but three subjects showed an increased excretion of 5-HIAA over the control period. There was no significant difference between the schizophrenic and the nonschizophrenic group, with respect either to absolute amount excreted or to increase following tryptophan loading.

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Hawthorn Center, 18471 Haggerty Rd.

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Effect of Triiodothyronine on Serum Copper and Basal Metabolism in Schizophrenic Patients

Correlations with Serum p-Phenylenediamine Oxidase, Erythrocyte Sedimentation, and C-Reactive Protein

B. J. MEYER, M.B., Ph.D.; A. C. MEYER, Ph.D., and M. K. HORWITT, Ph.D., Elgin, Ill.

Copper, an essential trace element in the body, is associated with several enzyme systems.[1] In the blood, copper is about equally distributed between the erythrocytes and the plasma. Over 90% of the plasma copper is bound to globulin.[2] This copper-protein (ceruloplasmin) catalyzes the oxidation of *p*-phenylenediamine compounds (ppd), a property which has been employed to estimate the ceruloplasmin level in serum.[3] Although serum ceruloplasmin is affected by a wide variety of stressers, it is relatively constant in unstressed mammals. The mechanisms responsible for this copper homeostasis are only partially understood. However, there are indications that various hormones may be implicated.[4-8] According to Narasaka,[4-6] the injection of thyroxine effects an increase in the serum copper of rabbits. Similarly, various workers reported high serum copper levels in hyperthyroid patients.[4,9,10] Kasanen and Viitanen [11] studied a relatively large number of thyrotoxic patients and concluded that there was no significant difference between the copper content of serum from these patients and that of serum from healthy subjects. Administration of desiccated thyroid did not increase serum copper in rats.[12]

This paper will attempt to evaluate these contradictory claims by reporting the relationship between serum copper level and serum ppd-oxidase activity before and after triiodothyronine administration to euthyroid human subjects. Such results might be related to recent reports that the ppd-oxidase activity of serum is altered in schizophrenia,[13,14] and to claims that some schizophrenic patients may benefit from triiodothyronine medication.[15]

Method

Subjects.—Sixteen male subjects diagnosed as schizophrenic, who had been carefully observed in a metabolic study for over four years, were used in the present study. These patients varied in age from 30 to 55 years and had been hospitalized for 12 or more years. During the metabolic study, their environment, as well as their dietary intake, had been carefully controlled. The clinical condition of these patients, including records of blood pressure, routine blood tests, and body weights, had been carefully recorded. In addition, the basal metabolic rate (BMR), plasma cholesterol, sulfobromophthalein test, 24-hour urinary excretion of creatine and creatinine, and various other tests not pertinent to this report had been performed at monthly intervals.

Experimental Plan.—The 16 subjects were divided into an experimental group of 11 and a control group of 5. Two different dosage levels of triiodothyronine * were used. The 11 experimental subjects were started on 100μg. of triiodothyronine per os daily, given in two equally divided doses at 8:00 a.m. and 5:00 p.m., and continued for 18 days. After 24 days without medication, 200μg. of triiodothyronine was given daily in two equally divided doses, and continued for 30 days.

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* Dose was calculated as content of L-triiodothyronine in the racemic form of triiodothyronine (Trionine), as supplied by Hoffmann-La Roche, Inc., Nutley, N. J.

Pulse rates were determined daily at 6:00 a. m., while patients were still in bed, and at 3:00 p. m., when the blood pressure was also measured. Electrocardiographic recordings and BMR were obtained twice a week. The BMR was determined between 5:30 and 7:30 a. m., 14 hours after the last meal, and while the patients were still in bed. The closed method, with the Sanborn Company version of the Benedict-Roth machine, was used. All the subjects were very well acquainted with this procedure, as they had been subjected to it at monthly intervals for more than four years (*vide supra*). Twenty-four-hour urine collections were made twice weekly. Blood was drawn at 7:00 a. m. Breakfast was served at 8:00 a. m. and dinner at 4:00 p. m. The patients were weighed at 7:00 a. m. and 8:00 p. m., respectively, three times a week.

Serum copper was determined by the method of Gubler et al.[16] and ppd-oxidative activity of the serum, by Ravin's technique.[8] Erythrocyte sedimentation rate (ESR), hemoglobin, hematocrit (Wintrobe) and C-reactive protein† determinations were also made. Urinary creatine and creatinine were measured by the method of Bonsnes et al.,[17] and I^{131} uptake and serum protein-bound iodine were determined at the start of the study to establish normalcy of thyroid function.

Results

Symptomatic Effects.—Two of the patients complained of weakness (especially when climbing stairs) after seven days of treatment with 200μg. of triiodothyronine. Three of the patients, one at both dosage levels, had brief spells of vomiting between the fifth and the eighth day of treatment. Two of them were obviously tense, and one complained of a peculiar feeling in the epigastrium prior to vomiting.

Psychological Effects.—Two of the patients treated at the 100μg. dosage level of triiodothyronine showed a slight increase in spontaneous activity and a prompter reaction to verbal requests. With 200μg. of triiodothyronine, four patients showed similar, but better-defined, emotional changes, consisting mostly of increased responsiveness, spontaneous activity, alertness, and interest in their own milieu. There was no evidence that the basic schizophrenic pattern was at all affected. After cessation of medication these effects gradually wore off. In judging the accuracy of these observations, it should be remembered that these patients had been under close observation in the same environment for over four years.

Cardiovascular Responses.—The pulse rates and systolic blood pressures of all but three subjects increased slightly on 100μg. of triiodothyronine. At the higher dose level of hormone, the pulse rates and systolic blood pressures of all patients increased significantly (Figs. 1, 2). The lower dose level resulted in little change in the diastolic blood pressure, but the higher level tended to reduce the diastolic pressure, an effect which was especially noticeable as treatment continued (Fig. 3). With 200μg. of triiodo-

† Obtained from Schieffelin & Company, New York.

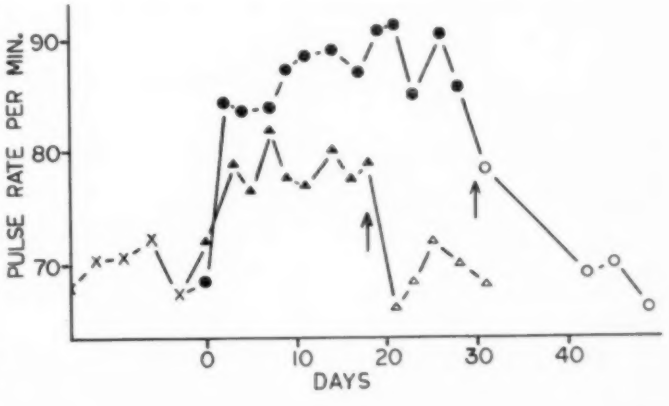

Fig. 1. — Mean pulse rate levels of 11 patients treated with triiodothyronine. In this Figure, and in the accompanying Figures, the line of X's indicates pretreatment levels; the line of black triangles, rates for 100μg. per day for 18 days; the line of black circles, the rates for 200μg. per day for 30 days; the line of clear triangles, post-treatment levels for a dose of 100μg. per day for 18 days; the line of clear circles, post-treatment levels for the dose of 200μg. per day for 30 days. Arrow designates the day treatment was discontinued.

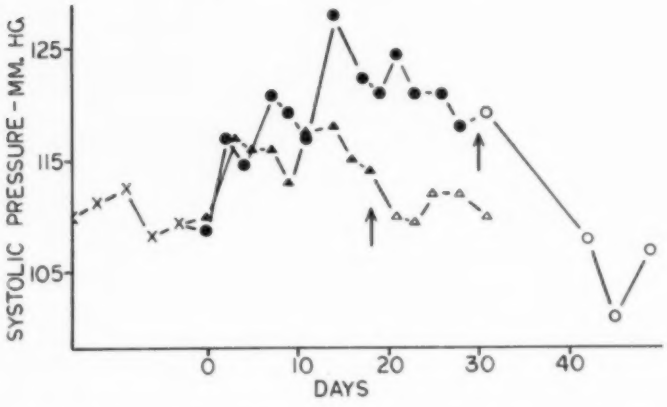

Fig. 2.—Mean systolic blood pressure levels of 11 subjects treated with triiodothyronine. Interpretation of symbols is given in the legend for Figure 1.

thyronine, very definite signs of increased cardiac irritability were observed, as revealed by significant increases in heart rate and short spells of tachycardia on minor physical exertion. On the fifth day of treatment, one patient, age 55, on 200μg., developed paroxymal atrial fibrillation, which lasted about four hours.

Basal Metabolic Rate.—Both dosage levels of triiodothyronine employed significantly raised the basal metabolic rate (Fig. 4). The maximum average increase with the 200μg. dosage level was 23 units, as compared with 14.5 units at the 100μg. level. In four of the patients, the BMR increased significantly within three days after medication with 100μg. of triiodothyronine was started, while three others showed little change until shortly before medication was terminated; their BMR continued to rise slightly for a few days afterward. The BMR of two patients was apparently not affected by the lower dosage level of hormone. With both dosage levels of triiodothyronine the maximum average increase in BMR was obtained after 17 to 24 days; the BMR did not return to pretreatment levels until 15 to 21 days after termination of medication (Fig. 4).

Copper and PPD-Oxidase.—Both the copper and the ppd-oxidase levels of serum increased during triiodothyronine medication (Figs. 5, 6). The maximum average increase in serum copper obtained was 15% on 100μg. and 23.7% on 200μg., and the time required to obtain a maximum response (15 to 16 days) varied little at each level. Except for minor deviations, the changes in ppd-oxidase of the serum paralleled the changes in serum copper levels (Figs. 5, 6).

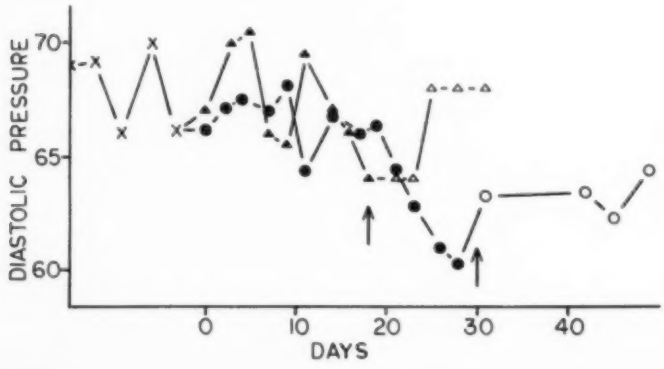

Fig. 3.—Mean diastolic blood pressure levels of 11 subjects treated with triiodothyronine. Vertical scale is twice as large as that used in Figure 2. The symbols are the legend for Figure 1.

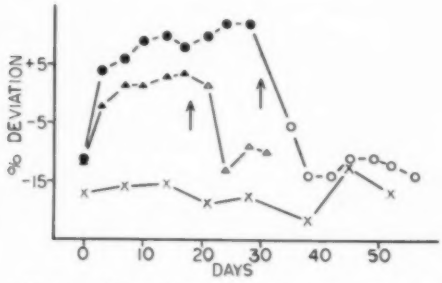

Fig. 4.—Mean basal metabolic rate levels of triiodothyronine-treated and five untreated, control subjects, respectively. Interpretation of symbols is given in the legend for Figure 1.

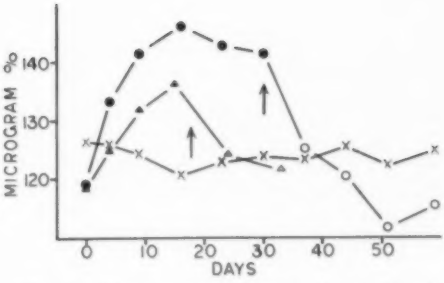

Fig. 5.—Mean serum copper levels of 11 triiodothyronine-treated and five untreated, control subjects, respectively. Interpretation of symbols is given in the legend for Figure 1.

The increase in serum copper and ppd-oxidase approximately coincided with the increase in BMR, erythrocyte sedimentation rate (ESR), and creatine excretion (Figs. 4-8). However, both the ESR and the creatine were on their way back to base-line levels while treatment was still in progress, the former more gradually, the latter more abruptly, whereas serum copper and ppd-oxidase were still almost maximally affected (Figs. 5, 6).

C-Reactive Protein and Erythrocyte Sedimentation Rate.—Both dosage levels of triiodothyronine increased the erythrocyte sedimentation rate, especially the higher one (Fig. 7). Although the ESR of nine of the patients treated with 200μg. of triiodothyronine reached levels of 35 mm or more in one hour, only three of them showed a mild transient positive C-reaction protein test.

Creatine Excretion.—Although average urinary creatine excretion was minimally affected by 100μg., it was increased considerably (85%-300%) in four of the subjects. With 200μg. of the hormone, the creatine excretion increased markedly (200%-700%) in all but three subjects (Fig. 8). During the first weeks of treatment, the creatinuria coincided approximately with increases in ESR, BMR, and serum copper. However, creatine excretion returned to pretreatment levels while the other indices of triiodothyronine function still showed almost maximal effects. Of the various indices of triiodothyronine function employed, the changes in BMR, serum ppd-oxidase, and serum copper showed the best correlations (Figs. 4-6).

Comment

The psychological changes observed in some of our subjects, although regarded as a

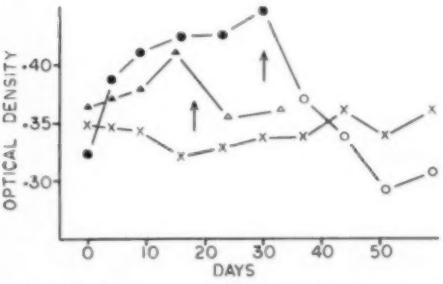

Fig. 6.—Mean serum ceruloplasmin levels of 11 triiodothyronine-treated and five untreated, control subjects, respectively. Interpretation of symbols is given in the legend of Figure 1.

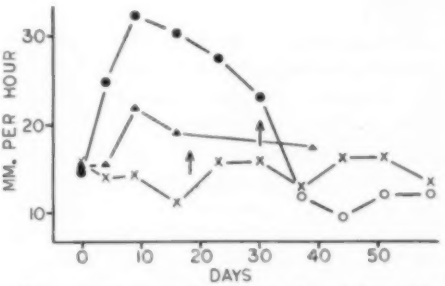

Fig. 7.—Mean erythrocyte sedimentation rate levels of 11 triiodothyronine-treated and five untreated, control subjects, respectively. Interpretation of symbols is given in the legend for Figure 1.

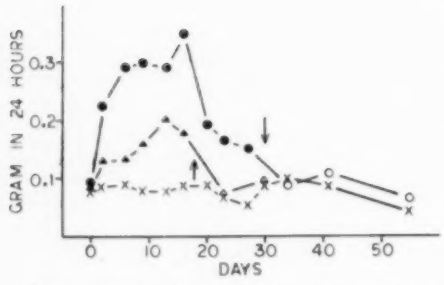

Fig. 8.—Mean urinary creatine excretion levels of 11 triiodothyronine-treated and five untreated, control subjects, respectively. Interpretation of symbols is given in legend for Figure 1.

transient symptomatic improvement, should not be considered as a partial cure of the psychopathologic conditions. Both the general pattern and the magnitude of emotional changes observed in the present study were in no way as promising as those reported by Flach et al.,[15] and agreed better with the observations of Strisower et al.[18] Naturally, the duration and severity of the mental disease and the duration of the treatment, as well as the functional level of the thyroid gland and individual responsiveness to triiodothyronine, demand consideration. Thyroid dysfunction is sometimes associated with psychopathologic changes, and, according to Batt et al.,[19] schizophrenia may be accompanied by normal or under- or overfunction of the thyroid gland.

With the special tests employed in the present study, we were not able to detect any thyroid dysfunction or any peripheral undersensitivity to triiodothyronine in our subjects.

The calorigenic response of our subjects to triiodothyronine differed widely. Individual responses were independent of pretreatment protein-bound iodine levels. Similar data have been reported by other workers.[19] Individual differences in peripheral sensitivity to thyroid hormone in schizophrenics might be important.[19] The explanation for the somewhat delayed or slightly prolonged calorigenic response in some subjects is not clear. The BMR was stabilized at the pretreatment level 14 to 21 days after treatment was stopped. Similar observations were reported for healthy male subjects.[20] The decrease in BMR to below base-line levels after medication was terminated (Fig. 4) is apparently due to suppression of pituitary thyroid-stimulating hormone.[20]

The increase in serum copper level noted in the present study confirms the observations of various authors on hyperthyroid patients.[4,9,10] Kasanen and Viitanen[11] have reported that thyrotoxicosis does not affect serum copper level, and only 57% of the thyrotoxic patients studied by Lahey et al.[7] showed elevated serum copper levels. Nielsen[10] obtained poor correlations between serum copper and BMR in thyrotoxic patients, while Horwitt et al.[21] noticed no apparent correlation between BMR and serum copper level in euthyroid schizophrenic patients. Gubler et al.[12] suggested that the plasma copper level is not regulated to any important degree by the thyroid gland. While the BMR and protein-bound iodine did not correlate with serum copper levels prior to triiodothyronine medication in the present study, the hormone did effect a more or less simultaneous increase in BMR and serum copper. Whether the increase in BMR was causally related to the change in serum copper is not known. The hormone also increased the ESR and creatine excretion, but these indices of triiodothyronine function gradually returned to pretreatment levels while BMR and serum copper levels were still high. If the plasma copper is related to the α-globulin level,[12] and hyperthyroidism raises the plasma α-globulin level,[22] one would expect some correlation between BMR and serum copper.

Although the 200μg. triiodothyronine dosage level had a stronger hypercupremic effect than the 100μg. dosage level, the relationship was not linear, and the hypercupremic effect of the higher dose was less than one had reason to expect from the respective ESR and creatine changes.

If a second stresser of mild intensity, such as a mild cold, was superimposed on the

hormone treatment, the serum copper showed an additional increment (unpublished data). Likewise, minor inflammatory lesions, which are not accompanied by a noticeable calorigenic response, may exert a stronger hypercupremic effect than triiodothyronine.[21] This seems to indicate that neither is triiodothyronine a particularly strong hypercupremic agent nor are its calorigenic and hypercupremic action necessarily interdependent.

In general, the changes in serum copper paralleled the changes in serum ppd-oxidase, and this finding agrees with data reported elsewhere.[8,21]

Summary and Conclusions

The effect of triiodothyronine on the psychiatric condition, BMR, serum copper, serum *p*-phenylenediamine oxidase, ESR, and urinary creatine were evaluated in 16 chronic schizophrenic subjects under controlled conditions.

Two dosage levels of triiodothyronine, 100μg. and 200μg. per day were employed. No overt hyperthyroid reactions were noticed with 100μg. of the hormone.

Of 11 patients treated with the 200μg. triiodothyronine dosage level, 4 showed psychological changes which might be regarded as a slight transient improvement in their psychiatric condition.

Both doses of the hormone employed increased BMR, serum copper, serum ppd-oxidase, ESR, and urinary creatine, the higher dose level being more effective. Although calorigenic and hypercupremic responses to triiodothyronine paralleled each other, they were not necessarily interdependent.

The correlation between urinary creatine and BMR or serum copper was not particularly close. The data are discussed, and attempts are made to explain some of the contradictory reports in the literature.

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Some Family Operations and Schizophrenia

A Study of Five Hospitalized Families Each with a Schizophrenic Member

WARREN M. BRODEY, M.D., Bethesda, Md.

The Family Study Project

This paper arises out of the work of the Family Study Project.* This project is unique in bringing family units into the hospital for study and treatment. Five families have lived in the hospital for periods of six months to two and one-half years. The two initial families each consisted of a mother and her daughter, the father having left the home. Two later families have included the mother, father, and two siblings, and one has consisted of the father, mother, and one sibling.†

Efforts have been made to allow the families as much privacy as possible. Each family has one or two hotel-like rooms for sleeping and private quarters. Recording has been limited to the therapy hours, family interactions in the common rooms—the halls, dining rooms, kitchen, occupational therapy room, and TV room—and such interactions in the families' private quarters as have been brought to the attention of the staff by family members. Attention has been paid to each family's way of handling everyday responsibilities, such as doing laundry, passing food at the table, getting passes to leave the hospital, obtaining medical attention from the internist, and the like. One father has continued outside employment while residing at the hospital.

The families selected have a young adult sibling diagnosed as having the symptomatic configuration categorized as schizophrenia. The small sample of families was chosen from those who would volunteer. The first two families were selected because the problem in the schizophrenic member was intimately entwined with overt family difficulties. In the second group, of three cases, this latter bias was not deliberately employed and remained only insofar as it was intrinsic to the situation. The detailed description of the project is presented in other papers.[3,4-6,8]

Circular Causality

When I joined the project in 1956, I looked forward to the opportunity of studying families as they operated together. From a child guidance background came an interest in considering, besides the influences of parents on the child's life, the effects of the developing child on the family. In the family, the parent is usually considered the person who molds the child. This simple linear cause-and-effect concept ignores our everyday experience, that the response returned by the particular child to the particular parent is significant in determining the influences that this parent will then exert upon that child. In this paper, relationships have been formulated in terms of circular or feed-back systems. Thus, cause and effect are considered dynamically interdependent, and recognition is given to the complication that *what is produced by the cause simultaneously effects the causal force.*

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Psychiatrist, Family Study Section, Adult Psychiatry Branch, Clinical Investigations, National Institute of Mental Health, National Institutes of Health, Public Health Service, U. S. Department of Health, Education and Welfare.

* This project began in 1954, under the direction of Dr. Murray Bowen. It is a part of the intramural clinical investigations program of the National Institute of Mental Health.

† Since the original draft of this paper, three more families have been living in, and other new families have been treated within the outpatient setting.

The Family Unit as Center Point

In this paper, the center point of the field observed is the family unit. The individual is taken out of focus, and hence information about the individual is not directly presented. The shift in orientation from individual to family unit presents an additional perspective within which human phenomena can be studied.‡

Part I

Staff-Family Difficulties

A striking observation, brought forcibly to my attention shortly after my initial participation in the family study project, was the extreme difficulty the staff and families had in working with each other. Since the families live in the nursing unit, the family and staff work out many everyday decisions. Even the simplest negotiations frequently skyrocket into an atmosphere of highly charged family-staff conflict. There was no indication that this tension was exclusively a function of this particular staff.

How does the high degree of conflict in those who come into contact with the family (for example, when passing food at the table), come about?

It was repeatedly noted that, although staff members get involved in a variety of conflicts with the family, the specific relationship position assumed (by whomever becomes overinvolved) is standardized, and can be closely related to roles peculiar to the particular family. A traditional position of the nurse is being like a mother, but, the "stand-in" § position that she comes to occupy in relation to a family can be described more specifically. The nurse finds herself replicating the behavior of the mother of that particular family, for example, constantly emphasizing the incapacity, weakness, and infantilism of the schizophrenic member of the family, and taking the omnipotent position, even though her usual response and her wished-for response is to encourage the genuine positive aspects of the schizophrenic member's personality. This taking over of a characteristic role of the family by the "stand-in" person is unwitting, though often obvious to everyone but the person involved.[14]

The extent of the countertransference response to the transference expectation, or, to use other language, the extent to which a staff member is "stand-in" depends, first, on the quantitative pressure from the family or family member directed toward him; secondly, on the qualitative matching or symmetry between the staff member's own intrapsychic conflicts and the impinging family conflict, and, thirdly, upon the quantitative degree of conflict within the staff member available to impinge on, or interact with, those of the family. Given the appropriate matching and intensity, there is set up a mutually reinforced circle of conflict (cf. the sadomasochistic marriage).

But the staff, too, is not only a collection of individuals; it is also, like the family, an interacting unit. The capacity of the family unit and its members to elicit and utilize the vulnerability of the staff group, particularly the points of conflict among staff members, is extreme and often distressing. The vulnerability and responsiveness of the family unit to intrapsychic and acted-out conflicts originating in the staff are equally distressing for all concerned.[7]

The presence of the whole family, father, mother, and siblings, at the family unit therapy meeting (held daily) vastly increases the intensity of conflict in all who share in this group situation. This stands in contrast to those days when the family is not entirely represented. Even the most casual visitors who have attended when the whole family is interacting report that as the meeting progresses, the atmosphere becomes electrified with tension, and it is a struggle to keep from becoming overin-

‡ The shift in focus can be distressing. A similar shift would be from a focus on automobiles to a focus on traffic.

§ The term "stand-in" is used in terms of the staff members overinvolved but is considered usable to describe others involved in the way described.

volved. Observers have reported a feeling similar to that experienced when entangled in a fundamental argument which has reached the point just prior to a physical battle.‖ The issue has become black versus white, and the immediate realities have been discarded. One would like to avoid taking sides, the battle positions are so uncompromisingly extreme. But the issue that one senses is not easily ignored. It is a vital life issue which resounds deeply within the self.¶ Yet, in spite of the feelings experienced, the tension of the meeting usually is not easily related to that which is being verbally stated. The words spoken are dissociated from the actions observed. The tension seems to emanate from the way the family members relate to one another.#

Restrictions in Breadth and Mobility in Family Relationships

A striking quality of the relationship among the family members is the narrow pathway that exists among them for awareness of each other. For example, in the family that I shall call the Bakers, Mrs. Baker seemed unable to be aware of the side of her husband represented in his actual, extreme efforts to become a Boy Scout leader, and to use this to develop a relationship with his son, Jack. He tells of these activities in terms of his wish—to outweigh the mother's closeness. Mrs. Baker was aware exclusively of the father's distance from his son, which, as she put it, made necessary her supporting closeness. Though both were aware of each other's closeness-distance, neither, in his/her relationship with the other, seemed aware of the existence of Jack as a person. The interest of each, in Jack, seemed restricted to counterbalancing the influence of the other.*

The family members each use a constricted band of cathected or charged awareness within which they each hear the other, think of the other, and consider as meaningful all stimuli that are admitted to awareness. Within this restricted perspective, the family members in their interactions together take widely divergent positions. For example, the member who becomes decision maker chooses and comes to assume the role of making every decision; the other family members give up entirely any sense of responsibility for self-decision, becoming so amorphous as to give the decider nothing to work with. In this way his decision becomes unreasonable. He is then roundly criticized for his now assumed dictatorial position. The decision maker turns to defending himself, rather than actually making even necessary decisions. Decisions are made by default rather than choice, creating new dilemmas. The development and maintenance of the divergent role position seems to have priority over dealing with impinging reality, i. e., getting things done.

Within the theme of decision making, the decider becomes omnipotent; the other family members become helpless. The person who occupies the omnipotent or the helpless position may change, but the dichotomy omnipotent-helpless remains constant in the families. In the group of five families this dichotomy is observed to be a major central theme around which the family roles and operations seem to group themselves.

Restriction in Breadth and Mobility in Family-Staff Communication

The extreme constriction of the band of awareness within which family relationships are contained is, at first glance, less conspicuous than the widely divergent viewpoints taken by the individual family members in relation to each other and to the staff. To define further this constriction, let us look first to its operational representa-

‖ Physical battle among family members has at times ensued, with staff members joining to prevent injury.

¶ Visitors and staff alike frequently respond profoundly, though their intent is to remain objective.

There are, of course, multiple sources of this tension. The manifest aspects of some will be described.

* Jack, too, related to his parents in terms of this conflict.

tion in the family-staff communication interaction.

When the project was arranged so that the parents could live in the hospital or leave as they wished, a mother, whom we shall call Mrs. Atkins, at a time of heightened tension in her family, begged the staff to give her a ruling, such as "You have to stay or you have to leave," denying her competence to make a decision. The response which said "You may do as you wish" was met with heightened anxiety and an increase in the effort to manipulate the staff member into saying, "You must." Mrs. Atkins worked desperately to pull into line —polarize—the autonomous stimulus, for example, *Do as you wish*, into line with her own narrow orientation, *You should-You should not do it so.*

A familiar example of this technique of bringing a communication into line with a particular narrow orientation is the effort of a compulsive person to force his therapist to use as a yardstick for evaluation of the patient's own constricted axis of orientation, *good-bad, clean-dirty, duty-not duty.* In this case, the therapist's efforts to speak in terms of *feasible-not feasible* are completely unheard, or the word feasible is heard as good and unfeasible as bad. The concept feasible-not feasible does not exist within the band of awareness meaningful to the patient.

Similarly, to Mrs. Atkins, *"Come or go as you wish"* did not fit with her constricted axis of orientation *should-should not*, and was not included in her constricted awareness. For her no answer had been given. Her anxiety increased. The effort to get the staff to play by her rules was redoubled.

In spite of the nurse's conscious efforts to avoid being caught in the Atkins' family system, the staff member involved with Mrs. Atkins in order to relate meaningfully † gradually became the evaluator and decider for Mrs. Atkins, fulfilling the transference request. The nurse was then dismayed to find the whole relationship expressed in terms of this fulfillment. Thus, Mrs. Atkins subsequently confided to the nurse: "I am only doing what you have told me I should; I have no choice." She had altered the place of the staff member into an acknowledged stand-in for the Atkins family —the external decider. The decisions now externally made by the stand-in person and the resultant action subsequently taken were now (as always for this mother) in logical agreement with the mother's lifelong pattern of action.

The Family Drama

The family, so far, has been discussed in the language of the individual and two-person systems. A major problem has been to find words which would describe a part of the family process which is clear when one observes the whole family together, and yet difficult to share; the breaking down of the family action into two-person delineations fails to serve the purpose. The following analogy between the medieval morality play and the family drama is used to highlight this part of the family process:

Let us imagine for the moment that you have joined the members of the staff in going to a play—a drama enacted by the family. You expect to identify with the characters in the play, sometimes with one, sometimes with another, and you anticipate becoming involved with the central conflict or leitmotif which the play dramatizes.

The family drama is unlike the modern theater. It is more like the morality play of medieval times. Actors take allegorical role positions that are stereotyped and confined —one is Good; another, Evil; a third, Temptation. Though the interactions of these roles are rigidly ritualized and limited, still the play has an impelling quality which tends to drive the audience into complete involvement, sharing with the actors in forgetting the complexities of life, perceiving only in terms of Good or Evil, Power or Helplessness, Omnipotence or Infantilism, and losing entirely the breadth of perspective, shading, and sense of impinging reality which are a usual part of everyday life.

† Further described in the section "Abandonment and the Loss of Contact."

Utilizing the symbols presented by this analogy, let us pursue our description of the family. Only a segment of the personality of each family member engages in the family drama. This part is a portion of self, selected in terms of the role to be played, and defined by the reciprocal interaction with the other players. It is observed that each family member has a broader spectrum of personality available to relationships *outside* the family than is available to family life. As one stands by, it is possible to observe the breadth of relationship present between a family member and a staff member (who is not overinvolved), rapidly narrowing as another family member moves into the conversation. Then, as each family member becomes progressively involved with the other, the breadth of relationship available for interaction gradually becomes increasingly restricted, until the family member is entirely lost in the stereotyped role, with apparently no latitude within which to operate. This occurs more rapidly if the family tension level is high. At this point comments made by the staff members are perceived *only* in terms of the slightest indications that the staff member is taking sides.

The morality play is an exaggerated representation of the facets of a conflict within a single person. Similarly, if we put each of the stereotyped family roles together into one, there is synthesized in this total the major conflictual characteristics of each member. One way of describing the families observed, then, is that the family members take up allegorical positions or roles in relation to complementary roles taken on by other family members. The major allegorical positions are such that the interaction between these positions will dramatize the major conflicts chosen for reenactment in the "casting" and development of the family. As in the morality play, the aspects of the conflict which ordinarily would be within the self appear to have become externalized, now being expressed in the constellation of family roles.

In the Baker family, Mrs. Baker takes entirely the role of the *unstructured, indefinite, helpless one.* She looks pleadingly at her husband when in his presence, seeming to choose every word in terms of his response as if she had no inner criteria with which to choose what to say. Mr. Baker, his wife reports, has always made the family decisions. In the family drama as observed, he does take the role of the *rigidly structured, all-deciding, omnipotent* one. He does not hear his wife's mutterings even when they contain the information without which his decisiveness becomes empty. At work, Mr. Baker was reported to be "soft and gentle"—but firm enough to get work done with a high degree of success. At home the father's "mathematical" decisiveness is surrounded by mother's amorphous helplessness.‡ The mother is unable to structure herself to father's exacting requirements. There is no compromise—no solution. The son, Jack, states his perception of the situations thus: "I cannot talk to my mother and father together; I have to be so different with each." He seems to have no identity of his own, existing only in his limited role position and as he takes sides.

The Special Use of Reality

Let us proceed with our observations, bearing in mind the concepts introduced in terms of the family drama. The interaction between family members of all the families observed is characterized by being logically correct, in fact, strictly correct in a rigid way. There is little imaginativeness. Fantasy expression is omitted except as condensed into the structure of the family (the family drama). The family members are concrete and superrational. There is a suppression of spontaneiety. There is no whimsy—all is heavy and overtly right. That which is fan-

‡ During one family therapy meeting, the normal sibling of the Baker family told of confiding her heartaches to father during their "father-daughter conferences." "Jack was only close to mother," she went on, "Mother told Jack of all her difficulties with father." Mother replied defensively: "I had to tell someone." The sister concluded: "Jack is sick because he had no one to relate to."

ciful, light, humorous, delicately poised, is condensed into the role of psychotic family member. The reality of internal needs is not included in this rightness. Biological needs, for example, sexuality, seem to exist in the family's awareness only in terms of the symbolic or open expression of the psychotic member.§

Superrational and Superirrational—Two Complementary Roles

In these families it is observed that the primary function of realism (as defined by the family) is to deny what is considered irrational, namely, the thoughts, needs, and fantasies coming from within themselves. Thus, in addition to the role of the superirrational one commonly denoted as psychotic (who apparently denies external reality and uses the external world primarily to express his internal life), there is a complementary role, the superrational one, who denies internal reality and sees his inner world primarily as expressed by the outside. The person who takes this role of the superrational one is not considered socially as psychotic; however, dynamically this role appears to have many characteristics in common with the psychotic. These characteristics, though well represented in our folk humor and literature, are not readily defined.

Externalization and the Individual

Previously with a group of "normal" mothers (seen every two weeks over a period of two years), I remember how they would often speak, sometimes with embarrassment, of being sick of their children and visiting the neighbors to get away from them. In listening to the families, within the observational field available in the hospital setting, I have never heard this type of a statement. Instead, there seems to be an acting out of these inner feelings within a screen of external reality.

When the relationship between Mrs. Atkins and her daughter was tense, the mother rarely visited; Mrs. Atkins explained this to her daughter, declaring, "I would have come to see you, honey, but the kitchen sink was blocked."

There was no indication that this was simply a consciously planned social excuse. Mrs. Atkins always spoke in masses of irrelevant, though accurate, data, accounting thereby for her every move, her moves being determined by the necessity to deal with outside realities, rather than by herself. The outside forces that Mrs. Atkins chose to come in contact with, and to be aware of, were those that fitted with her own projections. She was able to choose accurately the staff member of whom to make a request, so that she did get the kind of response that made necessary—the usual action. As illustrated in the previous example—her efforts to get the staff member to decide for her whether she would stay or leave—she was able, by focusing for attention, to create for herself an external reality that fitted with her projection, to externalize into reality what might otherwise have been her phantasy. (As you will recall, the nurse had in fact been successfully induced into the role of external decider.) Whatever Mrs. Atkins did then became completely rationalized, by the necessity to deal with the fragment of external reality to which she attended—for example, she used the blocked kitchen sink when the nurse was not available.

The daughter's circumstantiality mimicked, and when overtly psychotic caricatured, the mother's use of circumstances to rationalize her own inner life. When, for example, Mrs. Atkins used the clock as a reason for her behavior, the daughter would correct her only by speaking in ridiculous (perhaps ridiculing) detail about the importance of minutes, to which mother responded by corrective detail and admonishment.

The process exemplified by Mrs. Atkins' special use of reality I have called *externalization*. Each of us selects for attention, creates, and participates in an external en-

§ As previously noted, it is observed that these restrictions need not apply to individual relationships outside the family.

vironment that is specifically integrated with our personal internal expectations. This process of dynamically integrating internal and external environment is usually accomplished through ego-mediated, actual working negotiations between the personal inner and the selected and impinging outer world. In the families observed, however, these ego-mediated negotiations do not seem to take place. Rather, the inner world is transposed to the outside with little modification, and the part of the outer world attended to is selected *only* as it validates the projections, *other impinging realities being omitted.* It is this second stage—the selection for awareness of validating reality and omission of the remainder—that serves to differentiate the process of externalization from that of projection. In this paper, the term externalization will be reserved to denote this process when it is a major unconscious mechanism—descriptive of a profound theme in the person's way of life.

Externalization in the Parent-Child Relationship—the Narcissistic Relationship

To use the illustration that focused my attention on the long-term potential effect of this process of externalization upon the parent-child relationship: I remember one mother, whom I shall call Mrs. Crompton, seen some years ago in a children's hospital setting, whose psychotic hypochondriacal symptomatology was projected as a delusion that her infant, a 5-month-old boy, could not "burp" and that as a result something dreadful would happen to him. As I watched Mrs. Crompton play with her infant boy, I noted that she was aware only of movements in the child that she herself had "initiated"—if the child smiled in response to his mother's smile, the mother responded. If he smiled of his own accord, Mrs. Crompton, though desperately clinging to the child's every move, was entirely unresponsive, and, it seemed, unaware. The child's autonomous smile did not seem to exist for her in any way. It did not alter even the timing of Mrs. Crompton's frantic efforts to have the child smile.

This is quite different from the mother who responds to the child's smiling however it happens to smile. To state this more broadly, Mrs. Crompton did not, at any time while observed, acknowledge the child's lead.‖ I wondered then what effect this state of affairs, if continued, would have on this infant who, in order to exist, must have relationship with this mother (who would certainly not allow other relationships). But the only responses that existed for mother were those expressed simultaneously with the mother's stimulus, and those usable ultimately for the projection of the mother's unconscious intense needs. These needs submerged entirely those of the child. The infant perhaps would learn that survival within this relationship depended on expressing his own needs in a way and at a time conforming with the mother's projected expectation. The long-term reinforcement of the needs which happened to match the mother's, and the frustration of the needs omitted by the mother, would then alter the child's behavior in the direction of validating the mother's projection. Such a relationship between a mother and her internal image of "her child" now projected onto a real child, who actively conforms with this image, gives a realism to the concept of symbiosis, for the child responded to by the mother *is* a part of herself.

To describe this kind of relationship, with a part of self as mirrored in the behavior of another, the apparently paradoxical term *narcissistic relationship* seems most appropriate. As conceptualized, the narcissistic relationship includes two ingredients: one person relating to the other as a projected part of self, the fragment of self projected being unintegrated with a perception either of self or of the external object, and, sec-

‖ Mrs. Crompton was aware that her baby did not burp as she expected. She concluded "logically" then that the baby "must be full of gas." It was this lack of symmetry with mother's expectation that became the focus of mother's own hypochondriacal fears for "the baby's welfare." This lack of symmetry was also the basis of Mrs. Crompton's diagnosis that the child was sick.

ond, the other person's becoming, within the specific relationship, symmetrical with the first person's expectations, validating them. To use a more familiar experience, in individual therapy with psychotics, the first stage of this phenomenon is similar to what has been called the psychotic transference, where the "as if" evaluation of the transference, maintained to some degree by the functioning ego, tends to become entirely lost. Continuing the analogy to individual therapy, the second part of this phenomenon would eventuate if the therapist then could and were to give up his own identity and become, for this relationship, symmetrical with the transference projection—all without conscious awareness.

The experience with Mrs. Crompton and her 5-month-old infant is a familiar one, observed so frequently as to become a major theme in the description of the family operations. For example, one mother, whom I shall call Mrs. Dorset, lectures her 21-year-old daughter, Sally, on how to be grown up. Simultaneously, mother leads Sally by the hand to the Coke machine. When Sally reaches for her own Coke, the mother, omitting this gesture, grabs the Coke first. She gives the bottle opened to her daughter, at the same time continuing verbally to denounce Sally for her dependence.[2] Other material indicates that Mrs. Dorset had entirely projected her extremely infantile helplessness onto her daughter, remaining herself superindependent (omnipotent). Sally, aged 21, speaks in baby talk when addressed by the mother, who, in turn, responds either in baby-talk tones or literally in baby talk. Sally speaks delusionally about wearing diapers. I do not believe that Mrs. Dorset was aware of the daughter's autonomous gesture to obtain the Coke. I expect that others who have worked with families with a psychotic member have observed this phenomenon—there are many ways to conceptualize it.

Externalization and Narcissistic Relationship as Seen in Family Communication[2]

Let us return to the clinical therapy hour and see whether the phenomenon of narcissistic relationships and externalization is useful and relevant in describing more generally the family operations observed, keeping in mind the illustrations of the five-month-old and the 21-year-old "children" and their mothers. Let us again employ as a focus for our observations the readily observable family-communication interchange.

As one sits and listens in the therapy hour, one becomes aware that each family member (particularly when under tension) responds to a message from another family member in a way which seems to be designed primarily so as to reinforce the possibility of getting a response which will fit with expectation. This is achieved by extreme restriction of the band of awareness. Thus, only a fragment of the message is attended to. This fragment is accurately received but the remainder omitted. The response is in terms of this fragment without reference to the whole, and with specifically altered perspective. For example, a statement is responded to in terms of its content without reference to its context, in terms of its symbolic meaning without reference to its immediate intent. The elaborately constructed metaphor used to explain an issue is taken in terms of its literal content; a decision about present action, with a minor qualifying statement, is received in terms of the qualifying statement. A value judgment is taken as a decision to act; and a decision to act, as a value judgment, as though the potential for action did not exist. A statement about the present with a minor future reference is received only in terms of the future. As with Mrs. Crompton and her infant, the message received is responded to not in terms of the lead of the sender but entirely in terms of the expectation of the receiver, as though the receiver had initiated the message. The remainder of the message is omitted. It is an opinion that the bizarre pseudorealism of the family

interaction has as a basic element these profound omissions.

When Mr. Dorset, in the therapy hour, addressed his wife about the "normal" daughter's going to school, he spoke initially with conviction about taking action the next day to make arrangements with the school principal. He thought it would be *good to get going.* The mother picked from the father's message only words referring to why it was good for the daughter to go to school. By picking up the word *good,* she "agreed" that schooling would be *good* for the daughter. She continually responded to his specifics about taking action in terms of omnipotent judgments about *the necessity for education.* She did not attend to the father's statements except as they reinforced by agreement or attack her own. Finally, Mr. Dorset gave up his *let us do it* position to argue against the mother's provocative ideological evaluation of education; no individual action *I am doing it* was conceived of; nothing was actually done. The mother's image of the father as being helpless and uninterested in the daughter's education was maintained.

Mr. Baker, in a family therapy hour, was fuming over who was to be captain of the family ship. At a crucial moment, he faced Mrs. Baker and told her: "You must take a position aboard the ship if I am to take one." Mrs. Baker, who had repeatedly complained of Mr. Baker's hardly recognizing her existence, replied pleasantly: "You know we never were sailing," and went on to chat about how the family spent summers away from the seashore—a matter important to her in terms of the healthfulness of the sea air. The metaphor was received as a concrete statement. Within the context of the meeting, there were no cues to indicate that this was a symbolic response. The mother's response did state her chronic complaint that she had been deprived of her health by Mr. Baker's unawareness of her misery.¶

¶ Mrs. Baker had successfully maintained her amorphous and helpless position, which was noted in the earlier example.

Mr. Dorset, in the first example, is diverted from his position of potential action into the about-education, good-bad axis of orientation of the mother. As the interaction twists toward this axis, he gradually assumes the position of attacking Mrs. Dorset's ideological stand about education, confirming her expectation. In the second example, Mrs. Baker, by her use of her husband's boat metaphor to talk about the seashore and her health, illustrates both the fragmentation and the massive omission noted above.

Many hours of listening to intrafamily communication and testing the extent of the loss of the remainder of the message by attempting to restore it, lead to a further quality of the communication that is not readily exemplified. One gets the impression that there is no deciding about what segment of the communication will be responded to; rather, that the part of the communication responded to is the only part that exists. It is this structural quality that includes the rejection of major aspects of reality that is considered intrinsic to the special use of reality observed in the family culture. The verbal-communication techniques noted are similar to the pattern set in the nonverbal communication between Mrs. Crompton and her infant son. The techniques utilized for family communications can be seen as consistent with operations observed as fundamental to externalization.

Limitations in Families' Capacity to Do Work

The use of the external realities actually impinging on the family, primarily as they relate to establishing and maintaining externalizations, interferes with getting work done. In the Dorset family, for example, the "normal" daughter actually remains out of school, while the family's ritualized deliberations persist. Her lack of education is becoming increasingly a valid source of concern.

In the operations of the family which I shall call the Ellicot family, the externalizations, though well established, are strongly

reinforced. This family includes husband, wife, and son, Tom, aged 18. All of the members of this family seem primarily engaged in maintaining their externalizations. Mrs. Ellicot is concerned that her son will starve unless she feeds him. She states, as she loads his tray with vast amounts of food: "If I do not feed him, he will not eat."

The son responds to mother's loaded tray by ignoring it, sometimes eating other food that happens to be around. Father continuously and perennially urges that mother stop treating the son like an infant, stop forcing him to eat. Mother, in response, simply points to the untouched tray. On one occasion, Tom apparently refused to eat or drink anything for seven days. (He lost some weight and was moderately dehydrated.) Mother's anxiety reached a new pitch. Father joyously declared that, though Tom had not eaten, at last he could not be force fed by mother—and was independent—free from the mother's domination. The immediate bind was temporarily resolved when both parents left the unit to visit a close nephew who "needed them." After they had left, Tom openly ate for himself. Throughout this episode, and, in fact, throughout the entire contact with this family, Tom's natural desire to eat when hungry was entirely omitted from family consideration.

The history of both Mr. and Mrs. Ellicot indicated extreme deprivation in terms of emotional needs, though both parents had been amply cared for physically. In the marriage, the mother took the dominant role, being superindependent. The father's position was one of passive resistance to the mother. This position expressed his desperate urgency to avoid being seduced by his own dependence. This threat he had verifiably embodied in his chosen wife. But, the issue of dependence-independence was discussed overtly, and considered as a meaningful issue only in terms of Tom, whose behavior kept this issue focused upon himself.

It seems superfluous to point out this family's limited capacity to function effectively as a family; they had for many years been preoccupied with issues such as those illustrated.

Function of the Psychotic Member

It has been observed that the symptomatic family member # has taken on, and been given, the task of mediating between, and incorporating, the externalized sides of the family conflict. His actions caricature or pantomime the family issues. He allows to be loaded on his back, and takes on, the burden of unresolved family issues. But he does not simply carry them; instead, he keeps them constantly alive, focusing them by his action upon himself. He utilizes for this process the techniques of his family culture: fragmentation, limited perspective, and restricted awareness. He incorporates within himself the separate images which the other family members each cannot integrate within themselves and must deal with by projection. He thereby assists the others in maintaining their equilibrium, receives in return the narcissistic relationship available, and avoids the stress necessary to establish an identity beyond the rudiments contained in the projections.

In the family which I shall call the Ferris family the parents maintain a sweetly harmonious all-is-well relationship. They do not hear any comments from each other or the therapist that would suggest that major areas of relationship and of reality were being omitted. These areas are managed by each silently manipulating external reality, and thereby the other. The overt movement of either parent into an area which is charged is met by the other parent with days or weeks of undisputed silence.* The son's efforts to find work as a salesman while he is still grossly symptomatic are hailed exu-

It can be seen that the symptomatology is not confined to this member.

* The family members are aware of these maneuverings only as being to help the other. The parental dispute is couched in terms of disagreement as to the best way of helping the son (cf. the Ellicot family).

berantly by the parents, together, as a step forward. In the parents' eyes, Roger has become well. Mr. Ferris arranges the job that Roger has selected without Roger's knowledge. By private agreement with the employer, he pays a portion of Roger's salary, and, to be available to help Roger, he secretly follows in his car while Roger makes his rounds. The son's symptoms include long periods of silence broken by "delusions" of being observed. Mrs. Ferris' sexual provocativeness, expressed in her tone of voice and body movements when involved with her son (as contrasted with her formal loving words when involved with her husband) have their counterpart in Roger's sexual "delusions" regarding the seduction of older women. Roger is the only member of the family who speaks of sexuality. It is his long silences the family works at ending; his secretiveness they admonish. These are his major symptoms.

Abandonment and the Loss of Contact

But how do the family members become so entwined with one another? Mrs. Ferris declares: "My happiness depends completely on the well-being of my son. It is when he is happy that I am happy; when he is upset, I am." The symptomatic daughter of another family bursts into tears after the interpretation is made that she feels the pain of all the family members. Attempts at self-integration persistently remain diverted to the effort *to change the other person.*

Let us return to the family-staff interaction and reexamine the difficulty noted by staff members in avoiding the overinvolved, stand-in positions. Why is it difficult to maintain an autonomous position in relation to the family? The following commonly reported, manifest countertransference experience which occurs in those overinvolved with the family may give some clues.

Those who come into close daily living contact with the families report that it is a struggle to maintain a realistic position in dealing with the family. The staff member who does not play the family game according to the family's prescribed rules of operation finds that he has no relationship with the family, and apparently no way of approach. Let us examine the stage of "no relationship," for, before long, one curiously begins anxiously to feel: *What a terrible person I am to cause so much anxiety—how unreasonable is my realism in sticking to my position.* As guilt and anxiety increase, frequently one retreats to giving in, or, even more frequently, to not taking issue or action to deal with some grossly distorted situation which impinges on oneself. One, instead, increasingly becomes caught in the web of fragmented rationalisms. Anxiety increases. There seems to be no way out except completely and inappropriately to ignore the family, while the situation becomes more bizarre, or to take an action which, regardless of how one turns, seems to be giving in, and giving up one's own initiative. As long as one takes the stand-in role offered, one can avoid isolation and the feeling of abandonment. Even the most valiant efforts to face this anxiety and to act autonomously in terms of one's own uniqueness † frequently fail, for the family has the capacity to turn any effort at autonomy so that it seems to be, and soon operationally becomes, included within the family network of rationalisms. The family quickly shifts to absorb the autonomous move into its usual structure, and all that is left of what seemed a useful move is a symbolic shrug of the shoulders.[17] The fluctuations of this countertransference response to the family members are remarkably reminiscent of the central issues reported in working with individual psychotic patients.

The problem of intense loss-of-autonomy closeness or ignoring distance (a denial of closeness) described in terms of the manifest countertransference response of the staff members is consistent with that observed when the family members are interacting with one another. A major theme observed in the family interaction has been the apparent fluctuation from a state of

† That one needs to operate so exclusively in terms of one's own uniqueness is considered an important part of the fiction induced through the countertransference response.

intense, combined closeness, with complete loss of identity and initiative, to a state of extreme isolated distance. For example, while close, the mother will fix the daughter's brassière strap as automatically as if she were wearing the brassière herself, or say, "Excuse me," in such a way that one is surprised to observe that it is from daughter's mouth that the cough has come, or the daughter will strike in a psychotic blow-up the staff member at whom the mother is angry. During the distance there may be long periods during which the existence of the parent is denied (as was Mrs. Ellicot and her tray). The dichotomy—intense closeness-distance—is subtly illustrated in the Baker family. When the son, Jack, first ventures on his own to start earning a little money, while still living with his family, Mr. Baker states: "You cannot earn a living that way. What good would that small amount of earning be, when I don't support you?" He omits any middle ground between extreme dependent closeness and extreme entirely-on-your-own distance. It is as though the family relationship exists within a clearly drawn circle, enclosing a system of narcissistic relationships. It is a family myth that whoever steps outside this reciprocal system steps into outer space, to float abandoned outside the "life-sustaining" circle of family relationship. It is observed that the symptomatic family member, in his efforts to leave the family, may be defeated by his need to direct his efforts, primarily, toward the denial of this myth.

Implicitness of the Rules for Family Operation

In usual family life, in addition to being aware of some of his own social machinations, each family member at times points out the others' twisting of reality for ulterior purposes. This is an acceptable part of intrafamily relationships. In the five families observed, a primary objective of each member is to change the other; yet the obvious twisting of reality has rarely been pointed out, except in the exaggerated mimicry of the psychotic member.

At one family therapy meeting, Mr. Baker, as usual, wheedles, cajoles, coaxes Jack, aged 27, asking him in high-pitched, syrupy tones why he does not continue the small business they have now helped him to start in the hospital. Jack has lost interest in this business. The family now considers it important and has done everything possible to encourage him. Father states: "After all, you want to help your daddy by putting money into the family coffers, don't you? You wouldn't want us to just give you money. No, you wouldn't want that! Which do you want?" When Jack replies: "Neither," Mr. Baker appears shocked and goes on: "If your daddy lost his job, you wouldn't let him starve, would you?" (The question is stated in a tone that makes the expected answer obvious, as in responsive reading.) Jack's answer, "No, I wouldn't help," is met with a patently *non sequitur* statement by Mrs. Baker, who has been silent to this point. Her indefinite remark changes the subject, although ostensibly continuing it.‡ When, later in this hour, Jack remarks about the father's wheedling tones, father responds with a facial expression indicating feigned shock. He then comments solicitously to the group that he hopes Jack will get well soon. Mother smilingly speaks directly to Jack, expressing her hope that he will get well soon; but reference to the subject of Jack's remark is omitted. Jack's voice shifts at this point to a symptomatically high register and to a tone more syrupy and wheedling than father's.

When Mr. Dorset asks Sally to do him a favor, he speaks in a tone of voice appropriate to giving a small child a special gift. Sally, childishly smiling and assuming the body stance of a child, responds to father "inappropriately," saying, "Thank you for the ice cream cone." She fails to perform the task assigned in the words of father's statement.[2]

The silences, *non sequiturs*, strategic changes of subject, fragmentations, and

‡ When the family mythology is threatened, Mrs. Baker acts quickly to reinforce its preservation.

other devices are rarely referred to by the family except as they are perceived to be used symptomatically by the psychotic member. The mother usually is the most powerful in her efforts to deny her own and the family's mechanisms. During the therapy hour, the therapist's efforts to interpret family action is frequently met with the mother's ominous statement, made with varying degrees of indirectness: "Don't touch me—I shall fall apart." We have dared to make process interpretations, often with salutary results.

Mr. Dorset, after considerable therapy, is now able in a limited way to call attention to cues referring to family process. This he usually does in terms of his refusal to take on his wife's anxiety.

Mrs. Dorset was seeking a new target by which to manage a crisis about matters long put off. It was now necessary to take a position in relation to her husband's increased adequacy. She, suddenly, became aware of her "normal" daughter's now chronic school difficulties and proceeded to develop a crisis in that area. After making a visit to the principal, she reported *his* excited concern with the problem. She attacked the daughter in an anxious tirade, focusing upon the daughter's long delay and helplessness in getting the school problem worked out. The daughter, upset about other matters, became increasingly tense, gradually shifting to an excited, guilty, helpless defense, polarized by her need to answer the accusations (often irrelevant), thus moving toward the role previously occupied by the father. However, on this occasion the father took a firm stand, epitomized in his warning to his daughter: "Your mother is a generator of anxiety, and you are sopping up her anxiety." This helped redirect the situation, and reduced the rapidity with which the externalization was taking place. The daughter did not take on the role that the father had vacated. Family anxiety remained high and was not immediately recondensed into the family structure.

The Escape of the Normal Sibling

It has been noted that the two "normal" siblings who have lived in the hospital with their families are abler than the other members of the family to recognize the distortions of reality. When the family pressure is high, it has been observed that both the "normal" siblings remove themselves from their respective immediate family relationships to relationships outside the family constellation. Both usually refrain from direct comment on the process, asserting their understanding instead by unequivocal action. Still, neither remains unscathed by the family culture. At a time of high internal tension about a relationship outside the family, one of the normal siblings did become intensely caught. On this occasion her need for support and a way out coincided with the family's need to be supporting. But when the outside relationship improved, the "normal" sibling quickly moved back out of her restricted family role (defending mother), taking, instead, action on her own. This entire situation was observably mobile and close to awareness both in the "normal" daughter and in her family; the parents in the presence of the normal sibling are able to relate with a freedom, flexibility, and breadth of awareness that one finds hard to believe, considering the limitations that exist in the relationship between the parents when involved with the symptomatic sibling. The pathological ways of relating seem to be focused within the relationship with the symptomatic family member. One wonders how this has come about.

Part II

The Circular Predicament

To this point, this paper has concerned itself with describing the families as observed during their residence within the observational and treatment setting. In order to understand and deal with the manifold problems that have arisen, it has been necessary to find a way of thinking that would give some clues as to what will happen next. The observed phenomena have

been grouped around two central concepts—externalization and the narcissistic relationship. One wonders what can be deduced from these concepts regarding the possible influence of the family culture on the growing child, and the development of this particular kind of child on his family.

Using the concept of externalization, the family operation observed can be defined thus:

A network of narcissistic relationships, in which ego-dystonic aspects of self are externalized by each family member and regrouped into allegorical roles, each epitomizing a part of the major conflict which was acted out in the original marriage. These allegorical roles are played by family members, or by substitutes—others who have been induced into becoming overinvolved with the family conflict. The constellation of roles allows the internal conflict of each member to be acted out within the family, rather than within the self, and each family member attempts to deal with his own conflicts by changing the other.

If we arbitrarily take this picture of the family, and assume that the observations made during the period of study of the family exemplify the life of the family over the years, then it should be possible to deduce some specific feed-back systems pertinent to the predicament of the child and his parents that would follow from this approach.§ The families have given us considerable information which may be categorized under the heading: this is *what* happened, and, this is *why* it happened. Using this information and our own time-limited observations, let us proceed with efforts to piece together and to reconstruct a model which would highlight the dynamic question: "*How* did this happen?"

To begin the construct, we would anticipate that the father and the mother each have powerful primitive conflicts with which they are unable to deal, except by acting them out. Their marriage would be predicated on such acting out. To illustrate in terms of one of the family's marriage: This mother was intensely close to her own mother. She nursed her during a long invalidism, giving up outside social life. After mother's death, she set off on an extended trip to visit her mother's relatives. After two years of visiting she returned home, arriving on the second anniversary of the death. Two weeks later, she married a man who was the ne'er-do-well of his family. She had known him only a few days. He expected to be nursed by her. She states, in retrospect: "This was the flightiest of my flighty decisions." Her first child died shortly after birth and was deified, as was her mother. The symptomatic family member was her second child. She was born with marked strabismus. This child was "cockeyed"—she could do nothing right. She was maintained as "mother's burden." The mother's relationship with her husband gradually became more distant, as her daughter's problem became the focus of the mother's world.

Perhaps if this second child had not been cross-eyed, she might have escaped from being cast as the "evil" side of the mother's pathological mourning process. The child's strabismus interfered with the child's own perceptual apparatus, making ego growth more difficult. The resultant dependency both made reasonable and encouraged the mother's expression of her need to nurse a bad and "deformed" child. The child's dependency remained as the focus of the entire relationship observed between the daughter and her mother. The mother-daughter relationship, as observed and historically related, excluded all other aspects of the world. The narcissistic relationship was early, well established.

The *matching* of parent and child, as presented above, is considered significant in all families. Let us construct an illustration that would highlight the typical development-and-resolution of crisis sequence as ob-

§ The term child is used to refer to the person in the "child" role. The term mother as well refers to the person in the "mother" role. The father is considered to share in the mechanisms highlighted in the mother-child model. His special position is discussed in other papers of the study.[6]

served now in the families. To implement the construct, let us assume that this sequence existed in the early mother-child relationship: A sensitive toddler bumps gently into a chair, turns curiously, and whimpers a little. The mother, fearful because of her own well-guarded, intense feeling of fragility, smilingly, reassures the child by violently holding him close. The child, observing the mother's taut face, feeling the tension in her limbs, screams too, verifying the mother's inner expectation that the child was severely hurt. The mother, hearing the child's screams, tightens. The child, responding to mother's cold-skin tension and high-pitched voice, screams louder. Mother's spoken words of warmth have little effect. Another crisis is occurring.‖ The mother desperately restricts the child's play space, in order to protect the child from further dangers. The child's opportunity to learn to cope with the environment is again reduced. The child is rendered more vulnerable to the real hurts that the parent is trying to avoid. One mother calmly states in retrospect: "I could never allow Sally growing pains. When she cried it hurt me; instead, I did *for her.*" The history suggests that Sally's growing pains came to be loudly expressed in repeated collapses that invited this parental response.

But how is the construct different from the picture as it would be with an "ordinary" intense mother and her tense child? First, the externalizing mother would use the child's hurt only as it serves as a validation of her own projection. A severe hurt on a day when the mother does not need this signal to project upon may bring from the mother no response whatsoever. This mother, as has been noted in families observed, would have a capacity to omit such impinging realities. A second feature of this mother's behavior would be that *whatever* she does will be done—*for the child.* This mother would abnegate entirely her own needs; they would return, however, to be expressed in what she perceives as the needs of the child. In the illustration, the child's minimal whimper, which may have many meanings, has but one to mother—a fearful cry for help. It is the mother's fear and "cry for help" that are expressed but the child's play space that is restricted—for the child's protection.¶

To the outsider this would seem to be a confusing situation for the child—the child's own perceptions would be so unrelated to the perceptions implicit in the mother's response.

But there would be a consistency available to the child growing within this type of apparently inconsistent relationship. This consistency and plan would be learned by the child in his *reality testing.* He would learn from experience that mother's response can be predicted by listening to her tone of voice, watching her stance and body movements. The same words spoken in different tones will have entirely unrelated meanings, but vocal pitch and tone, the ballet of body movements, supply a consistent language that can be followed and used.

An awareness of this *action language*[8] is a part of the learning of every child. It is necessary for the relationship functioning of each person. It is the omission of large areas of impinging reality, and the special use of what remains, that constitutes a special feature of our construct.# Unlike the ordinary anxious mother, who responds with an exaggerated reaction to the actual event, the response of the externalizing anxious mother will omit, or be only minimally related to, what has actually occurred. The impinging reality will determine the mother's response only as it is construed by

‖ The development of the crisis noted is analogous to the scream in an electronic system which the public speaker learns to avoid. This occurs when the microphone and the loud speaker, both set for the same frequency, face each other and pick up and reproduce each other's sounds in phase.

¶ This issue is expressed by the pediatrician, who "wishes he could give the sedative to the mother instead of the child."

It is considered that salient features of the families studied are to be observed through the determination of what is absent, as well as the examination of what is present.

mother to fit with her anticipations. What will not fit within this restricted band is omitted from awareness.

The key to prediction of the response of the ordinary anxious mothers remains a knowledge of external reality—"better not bump into a chair or mother will get upset." The key to prediction of the externalizing anxious mother's response, the determination of what she will attend to, and what will occur next, is a knowledge of mother's inner workings. What will happen next is *not* determined by chairs bumped into. Even if the chair is avoided, something will be found to create the crisis necessary to mother's internal economy.

But this process is not conscious to mother. The rules which allow prediction are specifically and actively denied reality value within the mother's relationship with her child, and within the family. Thus, the child would experience and value a reality not only different from that ordinarily perceived and cathected but also unsupported by its conscious acknowledgment by the parents. The family code accepts as real, instead, the partial perceptions and pseudorationalities which serve as a legitimatizing screen for primary process. These are the content of the families' awareness, thought, and verbal communication. It would soon be learned from accurate reality testing that this accepted family reality * is split from *actual* behavior.

The reality that allows prediction would be external cues to an unconscious process. The cues, learned early in every child's development, would continue as the structuring framework of reality. Ink stains, bruised shins, school grades, words, within the family would be of predictive value only in terms of this framework. An intense closeness to the unconscious of the mother as manifest in her action would allow prediction. The capacity of the child to live in his family world in terms of primary process would receive survival value. Within the family circle *accurate* reality testing would chiefly reinforce the continued cathexis of primitive primary-process mechanisms and give reduced reinforcement to the development of ego functioning and secondary process as ordinarily conceived. Instead, the continued "holding of mother's hand" would allow a meaningful contact with the significant reality—a situation appropriate for the infant, but hampering when maintained.[5]

But let us look at the other side of this same circle. The child has learned to be aware of the manifest cues to mother's unconscious process, giving reduced value to mother's efforts to deal with reality by mechanisms other than those expected. If mother's anxiety † becomes reduced, her need to externalize may also be reduced. But the child's exclusive sensitivity to mother's inner life remains. He has learned to omit the value for action of the conscious representations of her ego work. He listens only to the unconscious, receiving for awareness only that which can be construed within the fabric of his now restricted expectation. He recognizes only the familiar infant closeness, making difficult mother's efforts to find a position for herself outside the infant-mother relationship.‡ The mother, too, is caught. The mother's effort to escape from this predicament by conscious recognition would also meet the inertia of a family code well defended against this possibility. It may be father, now, who maintains the family equilibrium by restoring mother's anxiety or taking the mother's former position in the mother-child relationship. The family code specifically

* The network of pseudorationalisms accepted in awareness by the family as reality has been called the family mythology. This mythology comes to have reality if one accepts the omissions (for example, of time). The structural aspects of this mythology are considered to convey a message in accord with the actual behavior.[5]

† The term anxiety is used to refer to bound, as well as free-floating, anxiety.

‡ It has been observed that the mother's effort to retreat from overcloseness is usually accomplished by encasing herself in isolating distance. There seems to be no middle ground.

operates to prevent conscious awareness of the patterns of relationship.§

This situation as represented is considered to be a feature of many families. How would the predicament that is developed come specifically to involve the ego's functioning as an agency for reality appraisal? In the families studied it is seen that external reality is used in a special way. External reality is used, primarily, to rationalize the unintegrated primary process manifest in the action language (what actually happens) and to prevent the usual form of integration between internal and external reality. It has been noted that only the segment of reality that verifies projection is attended to, and even powerful impingement of asymmetric reality is omitted. Fragmentation, altered perspective, and omission—these, all unspoken and out of awareness, would comprise the rules to be mastered for socialization within this family culture. The child of this culture would learn a special way of appraising reality.

For the child of this culture and for the parents, when intensely caught, new difficulties which increase the predicament would mount by the day.‖ To illustrate, the child, as described, would be ill prepared for experiences outside the family. His reduced conviction about reality, as perceived and cathected without thought by those outside the family, would leave him divided from outside relationships. The child, though expert within his own family culture, would be a foreigner to the rules of relationship and reality appraisal accepted by the neighborhood culture. Though skilled at sensing the unconscious component manifest in the action of others, he would be less capable of evaluating the kinds of ego work which, ordinarily, modify behavior. His preoccupation with finding a place for himself, entirely in terms of the expectations and the structure which he sees as set by others, may interfere, for example, with enjoying a game of baseball.

Finding outside reality divergent from the image of the world presented by his parents, and not fitting with his own system of prediction, he may look for security by staying at home, clinging to mother. He may now demand an intensity of relationship, in which even his attacking of the family reality is but a screen obscuring an exclusive cathexis upon family attachments, undiluted by outside interests. Or he may "run away," thinking of life only as a denial of his parents, struggling against early convictions, but in his preoccupation finding only "stand-in" relationships.

Efforts to establish outside relationships, in the way he has learned, would prove difficult. If he has "run away," the very intensity of his search for new kinds of relationships may prevent their establishment and verify his fear of abandonment. The model for relationship that he has early cathected is the intense narcissistic relationship of his own family experience. Other kinds of relationships may seem unreal.

At home, budding experiments-in-relationship, anxiously communicated to parents, may be met with blanketing parental helpfulness or abandonment. The request for assistance with self-initiated effort that is just beginning to succeed may be construed and dealt with by inappropriate consoling and redirection.¶ Difficulties with outside relationships would substantiate the myth that only the family relationships can be "life-sustaining," reinforcing these difficulties. But the parents would be unaware of these events. "They always kept me away from other children," the child states. "We

§ In each of the family members the omission from awareness of relationships is striking. This seems to be related to a difficulty in obtaining distance and regarding self. It is noted that during the phase of distance mother's thoughts remain explicitly attached to ruminations about this distance and the other person's part in it. This lack of self-awareness is in marked contrast to the capacity to comprehend the intimate (though not the surface) workings of others.

‖ No effort is made in this presentation to discuss the new situations that work to reduce the predicament, though these are equally significant.

¶ This type of experience is reported with regularity.

even arranged for him to have playmates, but he didn't know how to play with other children," the parent states.

But every family has its own way of presenting reality, and even in the family described the "normal" children still manage. What further can we deduce about the circle that might be specific to the development of the kind of operations seen in the families observed?

Structurally, the families observed allow, for each of their members, specific roles. These are noted to be narrow and restricting. The normal siblings and parents are observed to play their roles when the family is involved together. But using the previous analogy to the theater, the actors play *roles* on stage and assume *full identities* (the integration of many roles) off stage. But the child of the play well cast, born on the stage when a new act is ready to begin, would grow up protected from, fearful of, and unprepared to deal with the off-stage breadth of experience.

For this child, there is a single family role to be reflected. In the families observed, this role has been explicitly presented when the parents are able to relate the pregnancy fantasies that they had about the coming child. Frequently the role, though unspoken, is indicated in the specific structuring of the parents' relationship with the child from birth. Mother's need to project may have been augmented by fortuitous circumstances (one isolated mother turned to her newborn child when her husband was called into the Army). The child who early fits is more in jeopardy (as was the child with strabismus). The manifest role has been stated in mother's concern over her child as "the sick one," "the one who could accomplish everything if . . .," "the one who is different and only mother can understand," and the like.

The child who is cast, accepts, and fulfills well one of these overdetermined roles has become caught in a timeless # drama. The involvement with a specific, overdetermined role position would give reduced opportunity for the integration and testing of other roles. The efforts to assume other roles would be specifically unacknowledged, as such. "When I was responsible they didn't notice," the child states. "Even when he was very young, we made up tasks to give him, to make him responsible. He never did them," the parent states.

Early testing is necessary for the building of a well cathected identity, functionally useful as a base for further testing and building outside the family, as well as within. A child of such narrow experience would have limited ways of relating to others. Even his own family members are impeded from changing within this relationship. There may be apparent no way of relating to this child, except that acted out in the establishment of the early constellation. "They never let me leave the house," the child states. "We tried, but he always got lost," the parent states. And so the circle now spirals through time.

In the families observed, we have noted the role of "the superirrational one," which appears to reciprocate the superrationality of the remainder of the family. The occupant of this role may express explicitly, and bring to attention, the implicit operations of the family culture, but the position assumed denies the significance of what is expressed. This overt expression of the reality of the family remains in the service

It is noteworthy that in the family one of the impinging realities commonly omitted is a sense of developing time. The sickly child remains the sickly one, even though the illness is long past. It is often difficult to realize that the strapping son is the sickly one. On the other hand, the incidence of appropriate illness at the psychologically appropriate time is equally remarkable. One son's Eustachian tube was treated with many insufflations and probings and became, indeed, closed and infected. One could, with equal accuracy state: This son's Eustachian tube became infected and closed and was then treated with many insufflations and probings. Hearing was *prior to his birth*, and subsequently remained, a major theme in whole family predicament.

of primary process, and so contributes to the predicament.

The skills required for the superirrational role would already have been *learned* by the child described. He is an expert at viewing external reality only as a reflection of inner life. His gradual assumption of this role allows and presses the parents into further avoidance of conflict within themselves by verifying their projections onto him of what they consider irrational—their inner selves and the unintegrated expression of their biological needs.* The expression of these would be displaced, to be embodied and located in the behavior of the symptomatic family member, and in terms of that location, defended against.

The narcissistic relationship established is reinforced by reciprocal projection and verification. This role casting and role taking is not one sided. By incorporating the ego-dystonic "irrational" side of the parent, the child not only gives to the parents a way to avoid inner anxiety and to maintain equilibrium, but receives in return (1) a pseudoidentity,† (2) the narcissistic relationship attached to these ego-dystonic pseudoidentities and (3) relief of his task of dealing with reality beyond these limits (he externalizes this by projecting responsibility to the parents who recognize it as their own, leaving and allowing for the child the irresponsible position and thus confirming the projection).

But the assumption of the narrow restricting role is considered to occur in many pathological family situations. The functioning of the family, as in the allegorical play, with one member in the superirrational position, seems not enough. The altered family organization observed in each of the families studied is so highly cathected, and its alteration so intensely resisted, that a biological origin grounded within major alterations of personality development in each of the family members seems likely. Observation of the behavior of each of the family members and their own reports all suggest major disturbances of early ego development in each of the family members. The conflict, projected and condensed into the structure and operations of the role constellation described, is noted in the families observed to be an exceedingly primitive one.

It is observed that the operations performed with the structure of the families have many features in common with those appropriate to the early biological symbiotic relationship. The central theme of the family drama can be described as the interaction between the helpless infant and an omnipotent parent.

In the physiological dichotomy of infancy, it is the relatively omnipotent parent who is the purveyor of reality to the helpless infant. From observing infant behavior, it is an opinion that the child initially sees reality in terms of his own inner needs. He recognizes first the functional agency that brings fulfillment (e. g., the breast), and later the person (e. g., the mother) who not only brings about this fulfillment but also performs synchronously many functions, including those not directed to the child. The beginning recognition of an *integrated identity* beyond the performance of these personally directed fulfillments, which may be termed *functions*, is considered to come after the early infantile symbiotic stage of development.‡

* It has been noted that the parents, in their denial of inner self, deny in consciousness an inner motivation. I have never heard one of the parents state: "I did this for me because I wanted to." An inner self which, without thinking, determines preference is omitted from consciousness. There must always be an external rational reason. The kind of statement epitomized in the words, "I did it, I don't know why, but I wanted to; it caused no difficulty," is ego-alien. Socially acceptable irrationality and inner-determined preference are denied self and considered psychotic.

† The term pseudoidentity is used to refer to primitive oral incorporation of projected aspects of the parents, which, remaining unfused and unintegrated, may later be disgorged to be embodied in the voices of a hallucination.

‡ This symbiotic stage is considered normally to be in the foreground until the second to the fifth month of the first year.[3]

During the symbiotic period the parents perform the necessary ego operations which mediate between the inner and the outer reality of the child. This reality is perceived by the parents from the child's wordless action communications, and interpreted in terms of the parents' own action experience with, and learned cognition of, these perceptions.

In the families observed, the dichotomy helpless-omnipotent, appropriate to the world of the infant, seems to persist and remain the major subject of the family's defensive operations. As noted in the "feeding problem" of the Ellicot family, the family roles observed are action representations of functions, for example, feeding and being fed, with diminished interest in the identity of the person who performs the function.

The parents see themselves as the feeders, the purveyors of reality, the sacrificing ones who are consumed in the process of giving, the ones who have no demands for themselves, only operating for the other—as performers of fragmented functions, but not as persons. This image seems comparable to what has been postulated as the infant's image of the parent, and suggests that the action language of the parents expresses a recapitulation of early infantile experiences.

The origin of this particular kind of conflict in the early lives of the parents has not been documented. It can be said that this primitive conflict has been an important determinant of the choice of partners in each of the marriages. In each of the families, the parents have told of their marriage in terms of the search for a partner who would be able to make up for their own helplessness.§

One mother, following her departure from home after considerable struggle, was determined "not to ask for help no matter what happened." She lived a life of extreme loneliness and relationship isolation. She spoke of the meeting of her husband as "finding, at last, some one who was strong enough to help her." The husband, though outwardly relating with salesman friendliness, was also extremely isolated. He hoped through his marriage to find strength from this woman who could "stand to be alone." His demand for an intense incorporating dependent relationship was, at first, denied. This was the very kind of relationship that the wife had "escaped" by leaving home. She had become at home the one who, from an early age, always "did for the others," including a chronically ill sister. It was not long after the marriage that the husband returned to his mother.

When, after a few months, the marriage was reestablished, the role configuration was structured to provide a position for the functions of the omnipotent one and the helpless one. The wife, taking the "omnipotent" role of her own childhood, related exclusively to her husband's helplessness (thereby avoiding her own), and the husband, becoming depressed, gave up his business facility and became the helpless one. From this role position he placed himself within the limited perspective of his wife's structuring of reality. Segments of the personalities of both husband and wife rejected this situation. When the wife became pregnant, both looked to the birth of their child for a new solution to their predicament. The history indicates that the conflict did become primarily expressed by and in terms of this child.

The reworking of the parents' relationships through identification with the child is considered a part of the usual parent-child relationship. But to parents, as those in the example above, the operations of the parents appropriate to their early dealings with their infant would have a special meaning. Their own relationship with each other would have as a major theme the operations of the infantile period. With the birth of their child, these operations could now appropriately become relocated into their re-

§ This helplessness-omnipotence is considered significant, not by its qualitative presence but by its quantitative pervasiveness within the character structure of the parents, as revealed in the observed family interactions.

lationship with the child. For the parents described, the identification with the infant would not be a passing stage. It would remain as a source of primary conflict well defended against, and not readily resolved. The division of function physiological to the early infant-mother relationship would be maintained, now focused toward the growing child. The child and parents would be less able to achieve, through dynamic realignments, the object relationships necessary to optimal growth and development.

The child, too, would not easily give up the infantile position. From the observations of the history of the symptomatic family members there are apparent, however, two major ways of managing the primary conflict at the infantile level. To illustrate: One daughter throughout her life has always remained the infant. This situation, however, was not apparent to the parents until she reached school and, in spite of the school's immediate distress, the parents' concern was not mobilized until early adolescence.‖ This child had left with the parents the functions they appropriately served during infancy, acknowledging for herself a position of the infant (and the queen in her fantasy life). In this family she states: "There is no place in reality for me. In my kingdom I can rule." Within the family she has ruled through the acknowledged helplessness of the regal infant.[11] The parents are unable to find a problem. "She is schizophrenic," they say with a smile, as if all were explained.¶ The predicament is well established. There is little apparent family conflict.

In the family whose overdetermined selection of marital partners was just previously mentioned, the awaited child, as she grew older, vacillated between taking the helpless role and assuming, like her mother, the superindependent isolated and overadequate role. When she was entering adolescence, her younger sister was born. Following this birth she took flight from her own helpless infantile position, assuming consistently, instead, the omnipotent infantile position. She (as mother had in her childhood) took over the care of her younger sister. At school she was regarded as a model student by her contemporaries, for whom she took the role defined for the valedictorian-to-be. On reaching college, following a slight physical illness, she suddenly regressed, becoming symptomatic.[9] She returned to her parents the executive functions that she had struggled to recognize and integrate. Her regression, acknowledged in action, by making necessary, the parents' omnipotence. Her sudden return to the infantile helpless role from the infantile omnipotent had extreme social significance. She was no longer a model girl reflecting the ideal; she was now psychotic. But, dynamically, both the helpless and the omnipotent roles are considered as representations of the same developmental disorder.

The above illustrations from the history of two families point up two courses that the child may take to deal with the predicament, but it is considered that there are many others. One other is considered appropriate for consideration in this construct. It is noted in the previous illustration that the omnipotent, isolated, superindependent role taken by the child was a repetition of the role of the mother. The mother referred to in the illustration had not been symptomatically psychotic.# She has warned many times that she will become psychotic if not handled according to her expectation. Her mechanisms of defense—externalization and the maintenance of relationship narcissistically—are so skillfully conducted that she is able to hold onto her role position and to operate within the narrow limits she

‖ The parents' lack of recognition of the symptomatology is not surprising within the framework presented.

¶ The use of a word as a magical entity is observed as common defense measure, which is significantly used in the structure of the family mythology.

One of the mothers whose daughter had always taken the infantile role did become psychotic. Her daughter then joined with her in her symptomatology and in demanding the staff to take stand-in roles.

has set, in spite of powerful buffets.* The history indicates that this mother was involved in a predicament similar to that of her child in her own childhood. She had found a solution to this predicament in her relationship with her husband and this daughter. It was the daughter who became symptomatic.

But such a spiral as has been described must have built into it powerful mechanisms that tend to prevent escape, as well as mechanisms which maintain progression.

The child, as has been observed after the development of symptomatology, works to keep alive the parents' conflict, presenting them constantly, with a need to deal with those conflicts in terms of himself. He thereby makes more difficult the parents' own struggle to find understanding within themselves. They must seek resolution in terms of changing the symptomatic member of the family. By focusing the parents' energy and attention on himself, the symptomatic member thus keeps the narcissistic investment received from the parents at a maximum.† The parents, too, retain maximally the narcissistic investment from the child, for upon the parents has been externalized by the child his image of the parents as the omnipotent ones.

But if the parents and child are so mutually caught in this system, how could the crystallizing out in a child of the symptomatology of this conflict be accounted for within the construct?

Inner conflicts which outside this relationship may minimally affect the operational capacity of the parents, are focused by, and more or less limited to, expression within the parents' relationship with the symptomatic member. It has been observed that the parent, outside the family relationship, has shown a capacity to operate without the restrictions which narrow his capacity within the family environment. Though the parents are restricted in their breadth of relationship and mobility with each other, and to their child, still their experience-in-relationship is not restricted to this interaction. The conflict acted out within this family drama is a major conflict, but it is well defended in a socially acceptable way. The child, however, as described is not playing one role of many. His one role has become the foundation of his personality. His experience has become limited to reciprocating the particular projection of his parents. He has grown up in the vortex of a circular predicament which has become a well-learned way of life.

This patchwork construct is an effort to examine longitudinally what can be deduced by combining the concepts induced, the observations made and the longitudinal histories presented.

It is but a construct, having value only as it expresses one way of viewing longitudinally the complex phenomena observed in cross section. The use of externalization and the narcissistic relationship as central themes do highlight and tie together some issues of the parent-child and family predicament which have stood out in the longitudinal histories, as they have unfolded during the various stages of relationship with the families. The construct brings into focus a third concept: that the conflict externalized has its developmental counterpart in the operations of the early oral, *symbiotic* stage of development.

Summary

This paper derives from direct daily experience over a period of 2½ years, with a series of five families who have lived as family units within the research hospital setting. During this time, family groups have participated together, as family units, in daily therapy meetings.

This situation is unique in providing an opportunity to observe the detailed day-to-

* At one point she took on the helpless role but managed this in terms of proceeding with an elective operation.

† For example, the parents' fantasies about loosing control of self are being reinforced by the active loosing of control by the symptomatic member. Their energy and attention then are turned toward the now necessary controlling of the symptomatic one.

day interaction of the family members, with each other and with the staff. It is considered that this special situation, though in many respects unrepresentative of the family life at home, has allowed the observer to assume a vantage point for observation which provides new material to be dealt with. The paper presents some of this new material, and one way of conceptualizing it.

Two areas have come into focus from the vantage point assumed. The first is the family unit structure, and the second, the comparison between what is reported by the family members to have occurred and what is observed to happen.

A premise, which is utilized in structuring the observations made, is symbolized in the term *circular causality*, and stated as the belief that in social interaction what is produced by the cause simultaneously effects the causal force.

From the continuity of observations made there have been induced two concepts which have been used as a framework for the presentation of this data. These concepts are called (1) externalization—a mechanism of defense defined as projection plus the selective use of reality for verification of the projection—and (2) the narcissistic relationship—a way of relating defined as a relationship with a projected part of self, as mirrored in the behavior of another.

These concepts are used in the second part of the paper to formulate a construct. This construct represents an effort to remobilize, from the family histories as presented and observations made, the dynamic development of the predicament observed within the families during their hospital stay. The construct develops and progressively utilizes a third concept: that the conflict of the family expressed in its structure and operations has many features in common with the structure and operations biologically appropriate during the symbiotic stage of human development.

The families observed have been described in comparison with a factitious abstraction —the "normal" family. One wonders what characteristics would be highlighted by comparisons with other real families studied similarly. Of special interest would be comparison with families who have one member delinquent, addicted, chronically ill from early physical injury, and the like. It is hoped that future studies will make such information available.

One area that could be examined further through such studies would be the specific relationship of particular family phenomena to particular symptomatology. Of the phenomena described, it is the operations grouped under the label "the special use of reality" that seem most specific to the particular kind of symptom development in the families observed.

In the writing of this paper, I have, for the purpose of exposition, taken a particular viewpoint and emphasized one segment of the phenomena observed. Therapy and the forces toward growth, the strengths and capacities of the family and its members beyond those presented, the differences among the five families, and the multitude of complications that bring question to the concepts presented, are left, as they must be, for the clinical experience of the reader to restore and review.

It is hoped that the material chosen for presentation by its nature asks questions which will be found relevant to the understanding of the *process* manifest in the constellation of symptoms labeled by Bleuler —schizophrenia.

Adult Psychiatry Branch, National Institute of Mental Health.

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Differential Maturation of the Central Nervous System as a Function of Early Experience

SEYMOUR LEVINE, Ph.D., and MORTON ALPERT, Ph.D., Columbus, Ohio

It has been shown [1] that infant rats which were stimulated daily from birth exhibited significant depletion of adrenal ascorbic acid when subjected to cold stress at as early as 12 days of age, whereas nonstimulated, control infants did not show significant depletion of adrenal ascorbic acid to cold stress until 16 days of age.

These results were interpreted as indicating that one of the effects of infantile stimulation was to accelerate the maturation of the hypothalamohypophysial system, inasmuch as depletion of adrenal ascorbic acid to cold stress appears to depend upon a functional hypothalamohypophysial system.

Since in the previous experiments we investigated the maturation of a functional system, we were interested in determining whether structural components of brain tissue also showed differential maturation as a function of infantile stimulation. Accordingly, the present report presents the results of experiments comparing the amount of cholesterol present in the brains of stimulated and nonstimulated infants at various ages. Cholesterol was chosen because it is a substance which exhibits a degree of permanence in the tissue and is assumed to be a good index of the process of myelination.[2]

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Research Division, Columbus Psychiatric Institute and Hospital, and the Department of Anatomy, Ohio State University School of Medicine.

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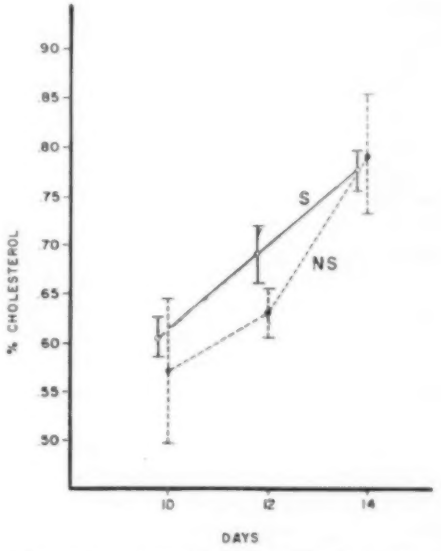
Subjects and Procedure

Sixty infant albino rats of the Sprague-Dawley strain were used in this experiment. The rats were randomly assigned at birth to either the stimulated or the nonstimulated group. The mode of stimulation, which was identical to that previously described,[1] consisted of removing the infant from the nest, placing it in a 2.5×3.5×6 in. compartment for three minutes and then returning it to the nest. This procedure was followed once daily from birth until the day prior to the determination of brain cholesterol. The nonstimulated, control infants remained in the breeding cage and were not treated in any manner.

At 10, 12, and 14 days of age, the rats were decapitated and the whole brain removed intact. Cholesterol [3] was determined on individual brains. At each age, cholesterol determinations were made on 10 animals from the stimulated group and 10 animals from the nonstimulated subjects.



Comparison of total brain cholesterol in stimulated (*S*) and nonstimulated (*NS*) infant rats. The circles indicate the mean, and the bars one standard deviation.

Results

The results of this study are shown in the accompanying Figure, which shows the mean and the standard deviation for each group at each age. All results are expressed as per cent of weight of fresh tissue. Inspection of the Figure reveals that there is a larger amount of cholesterol present in the brains of the stimulated rats at 10 and 12 days of age. However, only at 12 days of age is the difference statistically significant ($P<0.001$). The lack of significance at 10 days of age is due to the large variability in the nonstimulated infants. In general, it was observed that the values of the stimulated infants showed very little variability, in contrast to the large fluctuations observed in the nonstimulated rats.

Comment

The results of the present study indicate that the maturation of structural components of the brain closely parallels the maturation of other functions. In this study, as in the previous studies dealing with differences in maturation as a function of infantile stimulation, the stimulated infant rats showed more rapid maturation of physiological characteristics.

Thus it has been shown that stimulated infant rats show accelerated maturation of gross morphological characteristics,[4] functional physiological characteristics,[1] and fundamental structural characteristics. Although there are undoubtedly many other developmental processes which can be investigated, we are confident that the effects of infantile stimulation on maturation are general and affect many aspects of development. The primary problem that now needs investigation is the physiological mechanism underlying these events.

In addition to the major findings of this experiment, it was observed that there were striking differences in variability between the stimulated and the nonstimulated groups. Large variability has also been observed by Folch Pi[2] and Sperry[5] and has been ascribed to either biological error or unknown factors. The data from this experiment would indicate that one of these unknown factors is the amount of stimulation present in the environment. It is apparent that in the normal routine of most animal laboratories there is generally a high level of stimulation present. In view of recent data[6] which have shown definite critical periods, of only a few days, during which the effects of infantile stimulation are most profound, it is possible that some nonstimulated infants received some stimulation during the critical period. If this is the case, then the values for some of these animals would be like those of the stimulated infants. In the case of the stimulated infants, however, the stimulation is either more uniform or more intense, possibly exceeding the threshold for this phenomenon, and definitely occurs during the critical period, thus producing greater homogeneity among animals. In our laboratory the breeding cages are never cleaned during the nursing period in either experimental or control group. However, this is not the case in most laboratories. Thus, depending upon the age of the infant and the extent of fastidiousness of the investigator, in any group of subjects there may be more or less stimulated animals. This problem is now under investigation, using specially constructed environment chambers which attempt to produce the optimum conditions of environmental uniformity.

It is apparent from all the information available on the effects of infantile stimulation that the prior experience of the organism is a potent biological variable.

We are indebted to R. E. Chapman and G. W. Lewis for their technical assistance.

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The Psychology of Schizophrenia

HAROLD A. RASHKIS, M.D., Ph.D., and ROBERT D. SINGER, M.A., Philadelphia

We hope that psychiatry will one day be based completely on science, and that the constant repetition of "psychiatry must stand on science" will not fall increasingly on as deaf ears as did Cato the Elder's *Carthago delenda est*. The compulsive scientizer, rushing about wildly, seeking to redefine psychiatric terms in basic English, stamping out untestable or irreducible concepts, querying incisively: "What do you *mean* by object relations? How do you *measure* milieu therapy?" might well be a ludicrous figure. Yet a certain amount of this sort of behavior would not be beyond the bounds of good taste and, indeed, might even be beneficial to the advancement of psychiatry.

As an example of how a scientific approach might be applied, we have devoted some thought to Gregory Bateson's concept of the "double bind." This idea has been suggested as possibly explanatory of how parents make their children schizophrenic,[1] and has in large measure implicitly been accepted by adherents of the "direct analysis" viewpoint.[2]

The "Double Bind"

Bateson defines the ingredients of a "double-bind" situation as follows: (1) two or more persons (usually a child and a mother); (2) repeated experience; (3) a primary negative injunction; (4) a secondary injunction, conflicting with the first at a more abstract level, and (5) a tertiary negative injunction, prohibiting the "victim" from escaping from the field. Implicit in this situation is the fact that the child is dependent on and approaches the mother for love, food, protection, etc.

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As an example of how the "double bind" works, Bateson suggests the case of a child who wants a piece of candy. The mother says: "Do not do so and so (eat the candy), or I will punish you." This represents a primary negative injunction. The mother then completes the "double bind" by communicating to the child: "Do not submit to my propositions (go after what you want; don't be a sissy)." This represents a secondary injunction, conflicting with the first at a more abstract level.

Repeated exposure to or continued existence in this kind of situation is alleged to lead to schizophrenia in the child. Bateson sees a summation of conflicts into a basic etiologic one: the mother "acting" as though she loves the child while she really does not. She asks the child to approach her, freezes up or punishes him when he tries, and then, when he withdraws, punishes him for his lack of affection or cooperation. This leaves the child upset and confused, since he cannot discriminate between the mother's conflicting messages. It is perhaps simpler at this point not to ask why the mother treats the child this way, for this would only get us involved with an immediately unnecessarily complicating factor, i. e., the schizophrenogenic grandmother. Bateson also posits the absence of a strong father to whom the child might go for clarification or reassurance.

Plan of this Paper

Bateson's proposal represents an attempt to advance science, since it does not merely reiterate that there is a schizophrenogenic mother, but describes a communicative mechanism whereby the mother transmits her schizophrenia-bearing messages to the

child. The parentogenic * theory of schizophrenia, though still unproved, now exists in more detailed form.

We may now state that there has been described a certain class of parent-child behavior ("double bind") which is alleged possibly to result in a certain class of behavior by the child (schizophrenia). We propose first to examine the description of this first class of behavior and determine whether it can be related to existing psychological theory, so that it may become a part of systematic human knowledge. We propose then to explore whether or not this class of behavior is sufficient and complete to account for its alleged consequences. Finally, we propose to formulate an approach which we feel is more inclusive than Bateson's, and to suggest research implied by this approach, which may then be subjected to experimental verification.

Scientific Theory

There are various levels on which contribution may be made to science. Mere uncontrolled observation, such as the phenomenal report of a single case, if later verified or denied by controlled observation, contributes to science. When a psychiatrist says that his schizophrenic patient has a cold, pseudoloving mother, he may be making a lasting contribution, provided he or someone else demonstrates that cold, pseudoloving mothers are significantly more numerous among the parents of schizophrenics than among the parents of an adequate sampling of nonschizophrenics. Yet at this point the most that has been established is a low-order empirical relationship. A higher-order empirical relationship has been established when someone who is able to put in measurable form the quality of being a cold and pseudoloving mother finds that it is systematically related to the quantity of schizophrenia, or some measure thereof, in the offspring. This would then be capable of mathematical expression. Yet even from this we would perhaps be able to deduce little about all of the possible relationships between mother and child, and their consequences, about the mechanism of communication between parent and child, about the relative roles of genetic endowment and learning, or about the mode of transmission of nonmaterial culture. These are doubtless some areas of mother-child behavior about which it would tell us nothing at all. We would therefore have a law or theory of very limited generality.

The ultimate aim of science in any area is the construction of theories built out of laws which are ultimately quantified statements about the nature of relationships between variables or constructs and of as great generality and simplicity as possible. In order to do this, science must deal with propositions open to verification; that is, one must be able to tell whether or not they are true. Second, science tries to deal with high-level abstractions which can stand as "explanations" for many phenomena, in order to avoid the accumulation of whole encyclopedias of minor relationships, which are merely examples of some general rule. It is not easy for us to see how one could verify the "double-bind" theory in its present form. It (the theory) would at least have to hold that no person not exposed to severe "double-bind" conflicts could be schizophrenic, and that all people exposed have to be schizophrenic. Even if "double-bind" situations occur in the life histories of all schizophrenics, it would not prove it to be the causative factor. How do we know, for example, that the "double-bind" behavior of the mother is not elicited by the child's schizophrenic behavior, which disturbs the mother but which has not been caused by her?

Nevertheless, it is striking how readily each of us in psychiatry and in psychology recognizes the "double bind" as a familiar concept. Apparently, we are not startled

* We must apologize for the use of this barbarous term; not only is it derived half from Latin and half from Greek, but it fails to distinguish between whether the parent produces or is produced by schizophrenia (or, for that matter, whether the parent produces or is produced by theory).

by its strangeness, or, to put the matter differently, probably each of us has at one time or another been "doubly bound." To speak somewhat loosely, but not very far from the point, some sociologists tell us that we live in a "doubly binding," two-faced, or hypocritical society. The Balinese mother is not completely unaware that she is preparing her child for the frustrations of later life; she is teaching him a role. To the extent, then, that the "doubly binding" parent is aware of raising a daughter to be sexy but not sexual, or a son to be honest but shrewd in business, there need be nothing pathogenic in the teachings.

Yet what of the parent who, out of unconscious ambivalence, manages to confuse and upset her child? Would not such a parent be schizophrenogenic? To answer this question with another, then, why are we and our children not all schizophrenic? Surely, we as parents are ambivalent toward our children; we are dishonest with them, even as our parents were dishonest with and ambivalent toward us.

Can it be that we are dealing with something quantifiable—not all-or-none, but, rather, more-or-less? If this is the case, there must be something that can be quantified. The hypothesis must be put in a testable or measurable form. Unfortunately, it is more than a little difficult to do this.

While the less theoretically or experimentally inclined among psychiatrists might respond to this with indifference, it should be pointed out that there are at least several thousand behavioral scientists who would be deeply shocked at such a response.

Conflict Theory

Following the course of neither the indifferent nor the impassioned, we note that there exists in psychology a considerable literature on "conflict theory," which deals on a *higher level of generalization* with problems like the "double bind."

In his field-psychological approach, the late Kurt Lewin categorized conflict situations under three main types. We need not be concerned with the first type, the approach-approach conflict, which involves a choice between two desirable objects or situations when one cannot have both. However, his description of the approach-avoidance and avoidance-avoidance conflicts is pertinent to our problem. In the approach-avoidance situation the conflict is over whether one should choose some desirable object or situation despite accompanying unpleasantness or punishment such a choice may entail. In the avoidance-avoidance case one must choose either one or the other of two unpleasant alternatives. Of course, Lewin envisaged more complicated situations, but the more complex cases consist of the contemporaneous existence of several of the three basic types.

In the simple situation of a child's wanting candy accompanied by the mother's threat of punishment for such an act, we have a simple approach-avoidance conflict. The child is torn between his desire for the candy and his fear of maternal retribution. How the child will act is contingent upon a number of factors, chief among which are the strength of his desire for the candy and the strength of his belief that his mother will severely punish him. The child may be frustrated, perhaps punished, or not, depending on his and his mother's actions. That is to say, he may get no candy, or he may even get a beating; but, according to Bateson, there is no reason to expect that he would get schizophrenia. He is only in a "single bind," which is turned into a "double bind" by the mother's contradictory injunction: "Do not submit to my demands; go after what you want; be independent." The child is now in what Lewin would call a double approach-avoidance conflict. The child desires two things, to have the candy and to please his mother by being self-reliant; but either the act of eating or not eating the candy may well call out his mother's disapproval. Simply, there is no pleasing the mother. If for the moment we ignore the child's needs, we are able to reduce this somewhat complicated-looking situation to a simple one. The basic aspect of the conflict situation is that the

child must do something, but no matter what he does, he is punished. We have now reduced the "double bind" to a case of avoidance-avoidance conflict.

This has important consequences for the child's motivational system, for his level of anxiety, and for other aspects of drive level with which we shall deal later.

It has already been pointed out that the "victim" cannot leave the field; he is dependent on the parent for food, shelter, clothing, and love, in addition to which he may be forcibly restrained.

The conflictual agent which blocks resolving behavior is referred to by Lewin, metaphorically, as a "barrier." In describing approach-avoidance conflict, Lewin points out [3]: "After the child has run against the barrier several times and has hurt himself, or had the wounding experience of failure, the barrier itself acquires a negative valence. . . . The negative vector usually increases gradually in strength and finally becomes stronger than the positive. . . . This withdrawal either may be physical as when the child retreats, turns away, or may be an *inward* going out of the field as when the child begins to play or to occupy himself with something else." This is essentially the explanation that Rashkis [4] gave his group therapy patients as to how they had become mentally ill. It should be noted that the withdrawal is at first temporary, and that many repetitions are needed for full withdrawal; conflict theory offers a partial explanation of this, and we shall go further into psychological theory to find a fuller explanation.

Miller [5] has formulated a law which states that in a conflict situation the avoidance tendency falls off more sharply, with increasing distance from the goal, than does the approach tendency. In other words, if at the goal the approach and avoidance tendencies are equal, as we move away from the goal the avoidance tendencies drop out first, and what remains are the approach tendencies. This means that, for example, the child will withdraw from an approach-avoidance impasse, but, as he withdraws, the avoidance tendencies are reduced so that the tendency to approach predominates. This leads him again to approach the goal (let us say, the mother); but, meeting again the impasse of equipotent approach and avoidance tendencies, he vacillates and again withdraws. Each impasse has empirically the effect of increasing the avoidance tendency, so that eventually the child will show little tendency to approach the mother. At this point the mother-goal changes her-its characteristics, and tells the child that he doesn't love her, and asks why can't she get through to him, why doesn't he come to her for love, etc. All of this, in the absence of alternatives, results in more withdrawal. We may already begin to suspect that the "double bind" is a special case of certain psychological laws.

Learning Theory

If a single area can be designated as the "heartland" of psychology, such an area is "learning theory." This area, to which we now turn, will take us a little further in understanding how the child caught in a conflict of avoidances (for that is what the "double bind" is) might come to be known as schizophrenic.

Liddell [6] has described an experiment in which a hungry rat is fed when he sees a circle but not when he sees an ellipse. The ellipse is then gradually made more circular and the circle more elliptical until the rat can no longer differentiate between them. This type of learning is usually referred to as DR, or "discrimination response," and in the experiment described by Liddell is seen the breakdown of such a learned reaction. Here, as the discrimination is made successively more difficult, there is, to be sure, at first an improved differentiation, but this then levels off, becomes worse, and finally disappears altogether; the rat no longer acts as though he could distinguish circles from ellipses. The outcome is what has been referred to as an experimental neurosis, or, better, psychosis.

What Bateson has called the "double bind," and what in Lewinian terms we have called a conflict of avoidances, may now be seen more sharply in terms of a failure in discrimination. Let us consider the circle as the "good" mother, the giver of food, warmth, protection, etc., and the ellipse as the "bad" mother, giver of conflicting messages. Conflict theory has already shown us why the "bad" mother is to be avoided, for she punishes the child no matter what he does. Yet it is impractical for the child to withdraw from the situation, for he continues to need what the "good" mother has to offer. Why can't he simply use the mother for what she is worth, and ignore all the "noise"? Partly because the child cannot discriminate among his mothers. He cannot keep the "good" one tagged or labeled; so he is psychologically forced to avoid them all.

Unfortunately, the child has no place to hide. The mother, now chiefly reacted to as a punishing mother, is unavoidable, and the threat of punishment is unpredictable and therefore omnipresent. This produces in the child *anxiety*. In psychology anxiety is now known as a secondary *drive*; i. e., like the primary drives (hunger, thirst, and sex), it serves as an energizing force, impelling the organism to activities, some of which will prove to reduce the drive level. We may assume that the child will perform sooner or later certain acts which will, empirically, reduce his anxiety level. It is not necessary to say that the child undertakes certain activities *in order to* reduce anxiety. Similarly, it is not necessary to say that certain acts have certain unconscious meanings. It is sufficient to say that certain acts, when performed by the child, result in the reduction of anxiety. Anxiety reduction is the reward for these acts. In learning-theory terms, these acts are "positively reinforced." Hence it becomes increasingly likely that they will be repeated. Obviously, the cycle of high anxiety and reduced discriminability, and the consequent strengthening of anxiety-reducing responses, may be generated in many ways, of which "double-bind" conflicts may be only one. This would eliminate any monocausal explanation. Any situation leading to high anxiety in the child may in this oversimple sense be considered a "cause" of schizophrenia.

Hull [7] has stated formally that the effect of heightened drive is to increase the response strength of any habit tendencies that may be aroused in a given situation. This being the case, why doesn't increased anxiety, which is a drive, increase the ability to discriminate, e. g., "good" from "bad" mothers? Teleologically, this would seem like a good idea, since it would not only solve the child's immediate problem but, conceivably, might even train him to be in later life a very highly discriminating person.

Regretfully, as Mednick [8] has pointed out, that which is increased under heightened anxiety is not the ability to discriminate but, rather, its opposite, the tendency to generalize. This certainly fits in with the observed clinical facts of schizophrenia, where overinclusion and broadening of the generalization gradient is the rule.[9] Mednick derives further from Hull that in complex situations the preschizophrenic (or schizophrenic) will perform poorly, being plagued by irrelevant and tangential associative responses, which compete with the appropriate or adequate response. How is it that these irrelevant and tangential associations come to predominate in the patient's verbal behavior? It is simply because they *are* remote from the nexus of undifferentiable, anxiety-producing stimuli, and their emission is hence anxiety-reducing, in the manner of primitive incantations and magical abracadabra.

Now, to view this empathically from the child's disadvantage point, we see needs and their frustrations, incomprehensible demands that he cannot satisfy, punishment or deprivations that he cannot overcome, the welling up of anxiety and feelings of panic but without means of exit, and increasing failure to discriminate among stimuli in the phenomenal field. In addition to this, we

have the performance of certain anxiety-reducing acts; the child doesn't know why he started to do these things in the first place—whether someone suggested them to him or he happened on them by chance—but they seem to reduce his anxiety. (At least they seem to reduce his anxiety until someone asks him what he is doing and why.) Because of his human diathesis for logical thinking, he has doubtless elaborated some rationalization of whatever it is that he is doing. Or, perhaps, the whole thing is done without awareness or in a haze of generalization.

The process of generalization is especially insidious. When the child is faced with a discrimination-requiring situation, the development of anxiety is not limited to the discriminanda, but extends to various seemingly irrelevant aspects of the nexus. Pavlov's dogs salivated not only to the food and to the bell but also to the halter, the hands of their trainer, etc. So the child has an accumulation of associations to the anxiety-producing context. And each of these, however evoked, becomes capable in itself of eliciting anxiety. These exist internally, within the child, as Mednick points out, as thoughts and ideas. Thus, we find that we are dealing with a central process.

Organization Theory

Among psychologists of repute we find both peripheralists and centralists. A peripheralist, by and large, accounts for what we perceive on the basis of the nature of the presented stimulus and the condition of the organ of sensation. A centralist, in equally approximate terms, postulates a central integrating mechanism as necessary for transforming a *sensation* into a *perception*. When the lines are drawn hard and fast, a peripheralist holds that the perception is nothing more than the subjective aspect of the sensation, at worst a mere epiphenomenon, while a centralist holds that mere sensations are meaningless data unless acted on by an operator. Such operators, or central constructs, involve a forward-moving time vector, nonoperant in spinal reflexes or in primary need-motivated responses when drive is at a high level, as in the case of the hungry subject to whom an ambiguous stimulus tends to look like food and elicits a food-seeking response.[10] Sex-starved rats attempt to copulate with the inanimate components of their cage; adolescents, *en frottage*, masturbate via the sheets covering their mattress. When need is sufficiently great, generalization is the rule; there is no recourse to evaluation, discrimination, or labeling. Need reduction is sought by any means whatever. What has been learned is "forgotten" or, rather, generalized; the response is immediate, but usually not to the point. To put it differently, the subject does not evaluate the situation; or, colloquially, he does not "think."

Interestingly, the term "think" has just about disappeared from the psychiatric literature as either a dynamic process or an explanatory principle. "Thinking" is something that becomes "disordered," but it is never in itself invoked to explain mental illness. We never say that a person is mentally ill or emotionally disturbed *because* he doesn't think right. We may say that someone who doesn't agree with us is "resisting," that someone who outargues us is "intellectualizing," that someone who apparently likes to think is "sublimating"; and we know of or assume psychodynamic antecedents to account for use of these mechanisms.

These mechanisms are in themselves ordinarily attributed to the ego, which is itself a central process or mechanism. Freud, although accounting for consequent events in terms of antecedent experiences, was a centralist (the id, ego, and superego are central constructs). We are able to deal with the term "think" in an effective way when we similarly consider it as a central mediating process.

Osgood,[11] in his mediation hypothesis, points out:

> When other stimuli [in this case anxiety] occur in conjunction with the stimulus object, they tend to be conditioned to the total pattern of reactions

elicited by the object; when later presented without support of the stimulus object, these other stimuli elicit only the "detachable" reactions. The buzzer sound, or its reverberating trace, is present at the time shock is given; originally conditioned to shock behavior in general, the buzzer alone evokes only certain reactions which may become "detached," e. g., anxiety. . . . The mediating reactions evoked by a sign give rise to self-stimulation. . . . To the extent that this self-stimulation . . . energizes the organism this self-stimulation can have motivational and reinforcing properties.

To bring this discussion back to the nexus of child, candy, and mother, we see that not only failure to "think," i. e., to distinguish, to label, to "not-generalize," is a result of anxiety, but that *"thinking" itself* can now produce anxiety. The mere "thought" of mother, of candy, or of wanting, is now anxiety producing. Further, thinking about something else, i. e., avoiding the realities, can serve to reduce anxiety.

It would not be profitable at this point to enter into a discussion of whether or not thought can originate intrapsychically without an initiating stimulus, for it is difficult to conceive of a situation in which no stimuli are being received. Even in the "stimulus-deprivation" situation [12] there persist stimuli of internal origin transmitted centrally by the visceral afferent portion of the nervous system, except perhaps (and there is a large question here) in the deafferentation of sleep.[13] Such stimuli, of course, have their associations, any of which might lead to anxiety-producing "thoughts."

At this point we would like to observe that there certainly seem to exist known psychological mechanisms whereby a child caught in a conflict of avoidances might learn to behave schizophrenically. We hasten to add, as we have stated earlier, that this is not the only way in which a child might become schizophrenic, and, indeed, we would suggest that this roundabout route is unnecessary.

It may be possible to account for all the signs and symptoms of schizophrenia by postulating a central integrating mechanism, in the manner of Osgood's mediation hypothesis. If externally or internally arising stimuli can, when received by a central integrating mechanism, be so thoroughly distorted or misdirected that the response is no longer referable to the stimulus, given the nature of drive reduction, no further explanation for schizophrenia is required.

We must now ask why we are not all schizophrenic. Surely, we have all experienced anxiety; our mothers told us that we were little boys when we wanted to stay out late and that we were big boys when she wanted us to do something for her, thereby hindering adequate discrimination of ourselves. We have all probably been in "double-bind" situations. We must, therefore, assume that some people are exposed to more anxiety than others, that some people are better at reducing their anxieties in conformity with the demands of reality than others, and that some people are better discriminators and evaluators of stimuli than others. All this seems to call for the positing of an idea capable of handling these necessities of our arguments.

In his organization factor, Rashkis [14] has proposed such a "theoretical construct," to use Zerby's terminology.[15]

Rashkis holds that the most efficient way in which to view schizophrenia is as a disorder of the organization factor. He points out that functional psychosis is not a disease, but, rather, is a way of behaving of organisms that have had a particular kind of life experience. He points out that in the process of development functional systems "learn" to perform psychological acts and that in time, or owing to particular stresses, adaptive responses decrease in modifiability and increase in rigidity, which makes restructuring of the phenomenological field increasingly difficult. The concept of the organization factor is therefore directly related to both learning theory and conflict theory and rests on the formulations of experimental psychology. Quoting directly [14]:

The following functions for the organization factor may now be proposed:

1. Directing or shifting the focus of attention
   (In attempts to leave the field and reduce anxiety, the schizophrenic attends to stimuli irrelevant or detrimental to his functioning as an adaptive organism.)
2. Coordinating information from various internal and external systems
   (The schizophrenic cannot differentiate orders of stimuli, nor can he relate his own anxiety responses to relevant external stimuli or coordinate his self-stimulated responses to each other in an adaptive manner.)

Rashkis points out that several distinct psychological functions are involved here, e. g., attention, drive, and stimulus differentiation, but that for the purpose of postulating a central construct they will be grouped under the "organization factor." To quote further:

> This factor may then be characterized as a central . . . mechanism which selects that to which we attend and which shifts our attention to a new frame of reference, set, or "mazeway." As it shifts our attention, there is periodically scanned an ambiguous situation or a choice-point. Accordingly, all of the relevant information must be brought to bear from our perceptual fields, past and present, including the feed-back from our various attempts at resolution. We are then in readiness for decision making and for the performance of integrated acts.

We can now see from our previous discussions how the learning experience of the schizophrenic in his particular anxiety-ridden environment would lead to a grave defect in the organization factor, to his inability to pay attention to or discriminate the relevant stimuli, and his inability to coordinate these stimuli or message units from various internal and external systems into adaptive modes of behavior.

At this time we should like to probe a little more deeply into those conditions under which the organization factor fails to develop adequately. That is, what enables one person to be so organized that he may avoid schizophrenia, while another develops schizophrenic behavior.

First, we must acknowledge the importance of heredity. We believe that it is possible to breed organisms for a "good" or for a "poor" organization factor, just as Tryon [16] has bred maze-bright and maze-dull rats. It is possible to test this hypothesis experimentally.

Next we propose that the organization factor develops as the result of certain experiences which the organism has during its life history. While recognizing the probable power of certain somatic experiences to inhibit the potential for growth of any psychological mechanism, we are here concerned with psychological experiences during maturation as contributing to functional mechanisms in the organism as it approaches and reaches maturity. We are not seeking to produce a dichotomy; rather, recognizing an interaction, we are calling attention to the systematic modification of one set of variables rather than to another. If a hypothesis is to be tested experimentally, it is necessary that we be able to control our variables in this way.

Early Experience

What, then, are the antecedent psychological conditions which would contribute most strongly to development of the organization factor?

First, we would propose richness, complexity, or diversity of experience. Clearly, the ability to discriminate must depend to some extent on the range of stimuli to which the organism has previously been exposed. We are not speaking on the simple level of visual-pattern discrimination by organisms reared in darkness; rather, we are referring to the more complex interpersonal interaction patterns with which one must cope in his social existence. It is inevitable that in the process of being exposed to such situations anxiety will be aroused. This is a direct result of the equally inevitable ambiguity which must sometimes arise in social situations simply because a child has not yet learned the possible range or combinations of stimuli to which he might be exposed and their possible consequences. It is not necessary at this stage to speak of different levels of abstraction, as these do not exist for the very young child. According to Piaget,[17] who has been

studying for some 30 years the development of logical thinking in children, it is not until the stage of preoperational thought (age, 2 to 7 years) that language develops as a symbolic function. At this age the child is not prelogical, but it is not until somewhere between the ages of 11 and 15 that he can deal with logical classes in any useful way. Indeed, using the Word Sorting test, Rashkis, Cushman, and Landis [18] found that among a group of normal adolescents, ages 13 to 15, none was able to sort abstractly, but achieved only a complex sorting that was in itself at no higher a conceptual level than was achieved by a group of schizophrenics. In fact, the schizophrenics were able to verbalize their performance in a more abstract manner than were the children—though lacking, of course, the communality of explanation shown by normal adults. Accordingly, we do not feel that it is intemperate to suggest that the fact of an injunction's being on a "more abstract level" has little or no meaning for the average child. If it is to have significance for the preschizophrenic child, we must postulate that he has supernormal abstracting ability, and, of course, we should then have to explain how he got that way. We consider that complexity itself can be anxiety-producing in children; we are not yet prepared to predict the result of continued too great complexity, or too rapid change. This might produce behavioral disturbance by itself.

However, complete freedom from anxiety is probably not the optimal state. It seems reasonable that the child should have experience with anxiety, since it is a condition of existence with which he will have to deal. An experimental problem is the determination of an optimal level of anxiety and how best to achieve it.

Second, we propose parental *discipline* as a necessary antecedent. Systematic introduction of rewards and punishments by the parent, or parent-surrogate, is an indisputably important source of aid in achieving discrimination ability. We are referring here to parental patterns of reinforcement. One thing that the parent can do, through ignorance, hostility, or some other conscious or unconscious device, is to confuse the child and produce avoidance conflicts or "double binds." The parent can also fail to reward or punish directly at all. As a patient put it to one of us: "Where were my parents? They weren't there." Physically they "were there," but they failed to reward or punish in a manner that was intelligible to the child. Direct observation of the application of rewards and punishments by parents is exceedingly difficult to achieve,[19] and verbal reports by parents lack reliability. Nevertheless, it is logically possible to accomplish a better cataloguing of parental reward and punishment behavior than we have yet achieved.

Third, we propose *love*, or some scientifically acceptable derivative or transformation thereof. Here we refer not to any ethereal or mysterious entity or essence which perfuses (or fails to perfuse) the home atmosphere in which the child is raised, but, rather, specifically to objective acts of love, such as the production of erotic stimulation by fondling, handling, or "gentling." Although the experimental literature [20] is far from clear on the exact effects of this kind of early experience, we believe that the most convincing experiments have yet to be performed. Apologetically, we are forced to admit that it may be possible to fondle or talk nicely "without love," thereby positing a construct "love" of which "fondling" or "talking nicely" is not a measure. However, it can be argued that a "fondling machine" could be built which, while it would not "love," would behave toward young organisms in a manner which they could not discriminate from "the real thing." If young organisms were capable of such discriminations, of course, parents would not have to admonish children about strangers bearing gifts.

Comment

In this paper we have considered the "double bind" in terms of "conflict theory," "learning theory," and "organization the-

ory." We find that in terms of scientific adequacy these three are more satisfactory ways of describing schizophrenia. That is, within the scientific context, it is not merely a matter of taste; it may, however, be a matter of esthetic preferences as to whether or not one looks to science for his view of the way things are.

Organization theory provides more than another way of saying the same thing that the other approaches have said, though in different language. We see here the "double-bind" situation in some perspective, identifying it as one of several possible royal roads to schizophrenia; as we have indicated, anything that serves to weaken the organization factor, or fails to aid in its development, tends toward the development of schizophrenia.

To the student of ego psychology this may sound strangely familiar. It would be wholly appropriate at this point to raise the question: "Why not substitute the term 'ego' for 'organization factor'?" There are, in fact, many good reasons why this substitution should not be made. There is a definite connection between psychoanalytic theory and the organization factor, but it is not via the ego. This relationship will be clarified in a later paper.

We are suggesting that this approach is a good one, since it opens up possibilities for research which can both make contributions toward explaining various aspects of psychopathology and also furnish basic additions to scientific theory. It may be helpful at this point to give a few examples, in addition to those cited previously. If, as we have indicated, central organizational factors are crucial, one area worthy of study is that of perceptual organization. We may raise questions such as: Do schizophrenics differ from normals on the Thurstone[21] factors of perceptual organization? If they do, what processes (variables) account for these differences? Under what conditions do these differences hold, and how may they be altered? How can we differentiate the verbal report of the schizophrenic from what he "perceives"? We may want to know whether "communality"[22] of perception is different for schizophrenics than for normals. To proceed from object to person perception, we may ask how the schizophrenic organizes his perception of "the other." That is, we might want to know whether schizophrenics adopt a particular kind of inferential set[23] when viewing others, whether they are able to shift such sets with ease, or whether, in fact, their perception of "the other" is amenable to classification under existing schemata.

As facts about such matters are being established, we may ask what type of learning or genetic factors would lead to such a state of affairs. At this stage we are beginning to account for the possible etiology of schizophrenic behavior. It is our contention that to skip to the beginning, as Bateson does, and to try to posit etiologic factors by essentially a correlational method without understanding the behavior one is dealing with, is probably not the best way to proceed. At this point neither the surface manifestations nor the processes involved in schizophrenia are thoroughly understood. Consequently, these factors are in need of serious experimental investigation.

Summary

The "double-bind" theory of schizophrenia is reconsidered from the viewpoint of conflict theory, learning theory, and organization theory. In terms of learning theory, it is seen as the failure to develop a discrimination response. A consideration of anxiety as a drive state is at the core of this analysis.

From the viewpoint of mediation theory, it is seen that anxiety can be aroused autonomously by a central mediating mechanism. The antecedent conditions for the development of a central organization construct in man are considered, and it is proposed that deficiencies in any of these antecedents might lead to schizophrenia. This proposal is capable of experimental or empirical verification.

Eastern Pennsylvania Psychiatric Institute, Henry Ave. and Abbottsford Rd. (29).

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Behavioral Effects of Lysergic Acid Diethylamide (LSD-25)

Space Localization in Normal Adults as Measured by the Apparent Horizon

SEYMOUR WAPNER, Ph.D., and DONALD M. KRUS, Ph.D., Worcester, Mass.

The behavioral effects of lysergic acid diethylamide (LSD-25) have been studied programmatically in the Clark Laboratories, utilizing the framework of organismic and developmental theory. In the course of testing some of the implications of these theoretical positions, a number of situations have been developed to study space localization. This paper involves the situation dealing with the so-called apparent horizon, i. e., that point in space perceived to be at eye level. This dimension of spatial organization has been studied extensively under various test conditions, e. g., under conditions of success and failure,[3] and under conditions of energizing and tranquilizing drugs,[1] and for various groups: depressed manic-depressive, and elated manic-depressive groups[2]; children of various ages,[4] etc. Of particular pertinence to the present paper is a developmental study using children of ages ranging from 6 to 20 years.[4] In that study, it was found that the apparent horizon was located significantly higher than the objective horizon (physical location of eye level) in the youngest children and that it systematically shifted to a position below objective eye level with an increase in age.

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Department of Psychology and Institute of Human Development, Clark University.

Dr. Harry Freeman, Director of Research, Medfield State Hospital, Medfield, Mass., cooperated in the execution of this study.

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These ontogenetic changes, together with our assumption that LSD-25 operates as a primitivizing agent, led to the hypothesis for the present study. It is hypothesized that under LSD-25 spatial organization will be more primitive, i. e., characterized by a lower degree of maturity. More specifically, it is hypothesized that for normal adult subjects under LSD-25 influence, the apparent horizon will be located significantly higher as compared with the position of the apparent horizon of these same subjects under "no-drug" conditions.

Apparatus and Procedure

S, seated in a dark room, was presented with a luminous square measuring 20 by 20 cm. Horizontally bisecting the square was a black line, which S was instructed to fixate; S's task was to instruct E how to move the figure so that the black line appeared at eye level. S was seated 2 meters from the stimulus figure, and his head was fixed by an adjustable headrest and chin rest to eliminate head and trunk movements.

The luminous square was so mounted on a rack-and-gear device that it could be moved in small steps up and down along a plumb line directly in front of S. The objective horizon was ascertained separately for each subject; this was achieved by measuring the height of S's pupils above the floor. The black line horizontally bisecting the stimulus figure was always placed initially at the objective horizon.

Each S carried out the task of locating his apparent horizon under two conditions: Condition A, two to three hours following oral administration of 75μg. of LSD-25; and Condition B, under control (no-drug) conditions. Twenty-four S's were tested under each of the two conditions. Half the group had the sequence drug-no drug; for the remaining S's the sequence was reversed. An average of one week was interpolated between testing under the two conditions.

Effect of LSD-25 on Apparent Horizon

Source	*d. f.*	*MS*	*F*	*P*
Between subjects (8)	23	212.20	<1.00	>0.05
Sequence	1	1.23	<1.00	>0.05
Sex	1	398.19	1.87	>0.05
Ss within sequence	21	213.39	--	
Order	1	1.60	<1.00	>0.05
Conditions	1	1,247.97	23.06	<0.01
Error residual	22	54.10	--	
Total	47	155.76	--	

Means, Cm. *	
LSD	+4.5
Control	−5.7

* A plus score indicates a position above objective eye level, a negative score indicates a position below the objective eye level.

Two trials were given in each condition, and the measure employed in the analysis was the mean for the two trials.

The S's consisted of normal volunteers, with ages ranging from 19 to 56, with a mean of 28 years.

Results

The results are summarized in the accompanying Table. In keeping with the hypothesis, the mean position of the apparent horizon is located significantly higher under conditions of LSD-25 (+4.5 cm.) than under control conditions (−5.7 cm.).

Comment

The shift in the apparent horizon upward under LSD-25 is in keeping with the hypothesis that LSD induced changes toward a more primitive organization of space, i. e., an organization characteristic of less mature persons. Adults under LSD, analogous to children, have their apparent horizons located higher than do normal adults without LSD.

The apparent simplicity of this interpretation is complicated by findings from other studies dealing with factors influencing the apparent horizon. These studies, showing that the general factor of mood affects the apparent horizon, have provided evidence that with success as compared with failure, with elated patients as compared with depressed patients, and with excitatory as compared with tranquilizing drugs, the apparent horizon is located significantly higher.[1-3] The findings of these studies have led to an interpretation of mood in terms of an organismic state possessing up-down vectorial qualities which are reflected in changes in the up-down dimension of space.

The findings of the last-mentioned studies, together with the findings of the developmental study and the present study, pose a question of the possible multidetermination of that aspect of spatial organization with which we are dealing. The systematic changes in position of apparent horizon from childhood to adulthood have been conceived to reflect changes depending upon maturity functions (self-object differentiation, etc.), the specific mechanisms of which have not been worked out but which seemingly involve variables not related to mood changes. If this is the case, then one would conclude that the changes in the up-down dimension of space are multidetermined.

An alternate possibility is that mood changes underlie changes in the position of the apparent horizon under LSD-25. It is known from the literature that LSD induces mood changes; and if these changes were consistently in the direction of elation, our findings of an upward shift of the apparent horizon could then be interpreted in terms of a systematic mood change. A preliminary assessment of this possibility was made by measuring the direction of mood changes under LSD in the present study through an adjective check-list technique.* No systematic relation was found between mood and change in the apparent horizon. Thus, this aspect of the study provides no evidence to question the multidetermination (general maturity; mood) of the position of the apparent horizon, and tends to support our interpretation of LSD as a primitivizing drug.

* The instrument employed to assess mood changes was a modified form of the Wendt-Nowlis Adjective Check List, prepared by Dr. C. C. Bennett, Boston University.

There is need for a definitive study to assess the role of the two factors, general maturity and mood, as determinants of the position of the apparent horizon. Such a study would demand simultaneous, systematic variation of both factors. Moreover, it would seem advantageous to assess mood changes more extensively by employing techniques to supplement the adjective check list used in this study, e. g., clinical-assessment techniques, over more extended periods of time.

Summary

This study is concerned with the effect of LSD-25 on spatial organization. The specific dimension of space utilized is the apparent horizon, i. e., that position in space experienced as being at eye level.

It was found that, as compared with control conditions, the position of the apparent horizon shifted significantly upward under the influence of LSD-25.

These results are discussed in terms of organismic and developmental theory. The implications of these results and those of other studies employing the apparent horizon are discussed in terms of the multi-determination of this dimension of spatial organization.

Institute of Human Development, Clark University (10).

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Lipid Factors in the Production of Encephalomalacia in the Chick

B. CENTURY, Ph.D., Elgin, Ill.; M. K. HORWITT, Ph.D., and P. BAILEY, M.D., Chicago

Studies of chick encephalomalacia, or "crazy-chick" disease, may provide basic information about brain metabolism. The techniques and some of the variables involved are described in this paper. The requirement for tocopherol, which by itself seems to be a specific preventative of encephalomalacia, is not absolute for any given species, but may depend on the presence of various types of biological and dietary stresses, especially those related to lipids in the diet.[1] Effects of ingested lipids on tocopherol requirement can be studied in chicks by taking the appearance of symptoms and lesions of encephalomalacia as the end-point in the demonstration of deficiency. The most effective diets used by other investigators to produce encephalomalacia contained large amounts of protein and highly unsaturated fish oils, hog liver fatty acids, or lard.[2-6] It has been suggested that the intake of unsaturated oxidizable lipids is of primary importance,[4,6] and that, in the absence of tocopherol, in vivo oxidation of polyunsaturated fatty acids through a peroxide pathway leads to the formation of toxic substances which cause the vascular injuries.[7] Tocopherol need has similarly been related to the iodine number of the ingested lipid.[8] In the present study, encephalomalacia was produced in chicks on a synthetic diet containing 4% corn oil which was treated to remove tocopherols. By using variations of this diet, it was possible to study the effects of other lipids having different fatty acid compositions. The effect of coconut oil, a highly saturated fat, was of special interest, since it was found to increase the incidence of encephalomalacia only when fed together with other, highly unsaturated fats.

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From the Biochemical Research Laboratory, Elgin State Hospital, and the Department of Neurology and Neurological Surgery, University of Illinois College of Medicine.

Methods

One-day-old Indian River-Nichols New Hampshire and Indian River White cross-bred cockerels, kept in electrically heated brooders, were given the basic feed mixture shown in Table 1. This is a modification of a diet designed to study bromine deficiency that provides excellent growth in chicks (over 450 gm. in 28 days).[9] The corn oil used in this study was first stripped of most of the tocopherols and volatile substances by vacuum distillation, and oxidized to a peroxide number (PN) of 50 by stirring with air at 95 C to destroy the residual tocopherols. Lard was similarly stripped and oxidized to PN 25.* Commercially

* We are indebted to Distillation Products, Inc., for stripping most of the tocopherol from the corn oil and lard used in this study.

TABLE 1.—*Components in Kilogram of Basic Chick Diet*

	Gm.		Mg.
Vitamin test casein	180	*i*-Inositol	1,000
Gelatin	100	*p*-aminobenzoic acid N. F.	300
Dextrose (Cerelose)	480	Nicotinic acid	100
Jones-Foster salt mix	60	Calcium pantothenate	40
Cellulose (Alphacel)	50	Menadione	40
Dextrin (white)	30	Pyridoxine HCl	20
Calcium gluconate	25	Riboflavin	20
Aminoacetic acid (glycine)	20	Thiamine HCl	20
L-Arginine HCl	5	Folic acid	4
DL-Methionine	3	Biotin	0.4
Stripped corn oil (PN 50)	40	Cyanocobalamin (vitamin B_{12})	0.1
Choline dihydrogen citrate	4.4		

TABLE 2.—*Effects of Varying Dietary Corn Oil and Vitamin E Supplementation on Incidence of Encephalomalacia*

Stripped Corn Oil (PN 50)	d-α-Tocopherol Acetate, Mg/Wk.				
	0.0	0.2	0.5	1.0	2.0
	Incidence of Encephalomalacia				
0%	0/10	1/15	0/9	0/15	0/5
1%	1/10	1/10	0/9	1/9	..
2%	2/6	1/6	..	0/6	0/6
2.5%	4/10	2/10	0/9	0/9	..
4%	16/19	11/19	2/10	2/18	0/7
8%	8/8	4/7	..	1/8	0/7

TABLE 3.—*Effects of Increasing Oxidation of Corn Oil on Incidence of Encephalomalacia*

Stripped Corn Oil (2% in Diet)		d-α-Tocopherol Acetate, Mg/Wk.	
		0.0	4.0
Peroxide No.	Tocopherol, Mg. %	Incidence of Encephalomalacia	
2.3	5	1/7	0/5
50	1	5/9	0/5
100	Nil	5/9	0/5

available safflower oil, cottonseed oil, soybean oil, butter, and coconut oil were similarly heated and aerated to destroy the tocopherols. Oils treated in this manner are not more oxidized than the fats in many fried foods. Lipids and water-soluble vitamins (Table 1) were added to a mixture of stock feed daily. Vitamin A (2,500 I. U.) and vitamin D (600 I. U.) were given weekly per os. *d-α*-Tocopheryl acetate U. S. P. supplements dissolved in corn oil were also fed in drops, half the weekly dose being given twice a week. The numbers of birds with encephalomalacia were reported after 28 to 30 days. The dietary lipids were analyzed for peroxide number,[10] polyunsaturated fatty acids,[11] iodine number,[12] and total, α-, and γ-tocopherol contents.[13–15]

In the first experiments, variations in corn oil content of the diet in Table 1 were balanced by adding or subtracting equivalent amounts of dextrose (Cerelose). The relationship of dietary corn oil to the amount of tocopherol needed to decrease or prevent the occurrence of encephalomalacia was studied by varying the amount of stripped corn oil (PN 50) in the diet from 0 to 8%, and by giving tocopherol supplements of 0.0 to 2.0 mg. per week (Table 2). The preliminary study of the possible toxicity of mildly oxidized corn oil was similarly conducted (Table 3).

In subsequent experiments, in which various lipids containing different amounts of polyunsaturated fatty acids were studied, substitutions of dextrose for fat in the diets were made isocalorically (Table 4). The effects of lipid mixtures in the diets on incidence of encephalomalacia were studied according to the designs shown in Tables 5 and 6. Iodine numbers and linoleic acid content of the dietary lipids are reported per 3,730 Cal., since this amount is equivalent to 1,000 gm. of the basic diet.

Results

At least 80% of the chicks developed encephalomalacia when fed a synthetic diet containing 4% stripped corn oil (PN 50). Ataxia, clonic and tonic convulsions, head twisting, paralysis, and death occurred after

TABLE 4.—*Effects of Various Dietary Lipids on Incidence of Encephalomalacia*

Dietary Lipid	PN *	Iodine No. per 3,730 Cal.	Linoleic Acid † per 3,730 Cal., Gm.	d-α-Tocopherol Acetate, Mg/Wk.			
				0.0	0.2	0.5	5.0
				Incidence of Encephalomalacia			
4% stripped lard	28	26	5	0/10	..	..	0/5
12% stripped lard	28	77	14	6/10	..	..	0/5
3% soybean oil	58	36	14	3/10	..	..	0/5
3% stripped corn oil	58	37	16	6/10	..	..	1/9
2.5% safflower oil	50	35	18	3/10	..	..	0/10
3.5% cottonseed oil	49	33	19	4/10	..	..	1/5
18% stripped lard	28	110	20	10/15	..	..	0/4
4% soybean oil	58	48	18	4/10	3/11	0/10	..
4% stripped corn oil	58	50	22	7/11	4/9	3/9	..
4% safflower oil	50	56	29	10/11	4/10	0/10	..
4.5% cottonseed oil	49	50	24	11/11	5/10	5/10	..
15% butter	0	63	2.3	0/10	..	..	0/10
20% coconut oil	1	20	3.6	0/10	..	..	0/6

* PN reached following heating with aeration to destroy virtually all tocopherol.

† Diene content, as determined by alkaline isomerization and ultraviolet-light absorption.

TABLE 5.—*Effects of Combinations of Safflower and Coconut Oils on Incidence of Encephalomalacia*

Dietary Lipids	d-α-Tocopherol Acetate, Mg/Wk.	
	0.0	0.2
	Incidence of Encephalomalacia	
15% coconut oil	0/11	--
3% safflower oil	7/11	--
3% safflower oil and 12% coconut oil	10/11	--
5% safflower oil	6/10	5/10 (0/10) *
5% safflower oil and 12% coconut oil	11/11	11/11

* Given 5 mg. of tocopherol per week.

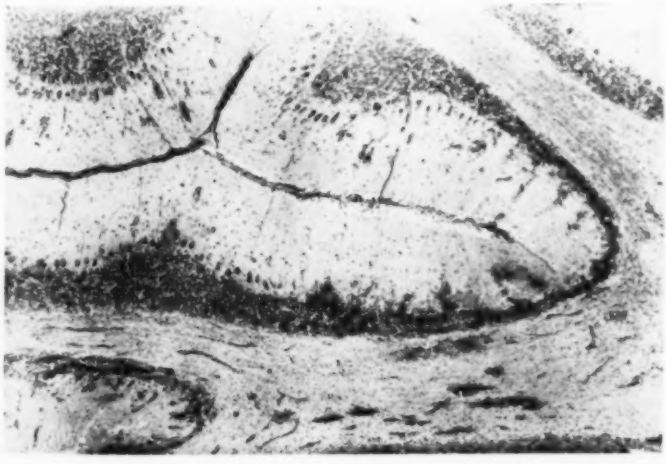
TABLE 6.—*Effects of Dietary Combinations of Corn Oil and Coconut Oil on Incidence of Encephalomalacia*

Dietary Lipids		d-α-Tocopherol Acetate, Mg/Wk.	
		0.0	2.0
Corn Oil *	Coconut Oil	Incidence of Encephalomalacia	
0%	12%	0/11	--
0.5%	11.5%	2/15	0/5
1%	11%	4/15	0/3
1.5%	10.5%	10/15	0/5
2%	10%	13/15	0/5
2%	7%	12/15	0/4
2%	4%	5/12	0/5
2%	2%	1/15	1/4
2%	0%	0/14	0/4
4%	0%	11/15	1/5

* Commercial corn oil oxidized to PN 100.

20 to 30 days. Such chicks exhibited grossly visible cerebellar petechiae, hemorrhages, and necrotic lesions. Supplementation with 4 mg. of *d*-α-tocopheryl acetate U. S. P. per week prevented the appearance of symptoms. In histological preparations stained by Klüver's method,[16] the hemorrhages can be seen to involve both the molecular and the granular layer of the cerebellum (Figure). When the hemorrhages are well developed, the Purkinje cells have entirely disappeared. No lesions were found in other parts of the brain, and hemorrhages are not preceded by visible changes in the blood vessels.

The effects of varying the corn oil intake and the tocopherol supplementations are shown in Table 2. The feeding of 4% and 8% corn oil diets resulted in encephalomalacia in 16 out of 19 birds, and 8 out of 8 birds, respectively. Progressively fewer birds developed symptoms when fed tocopherol-deficient diets containing smaller amounts of corn oil. Tocopherol supplementations of 0.2 and 0.5 mg. per week decreased or prevented the occurrence of encephalomalacia to a greater degree with correspondingly less corn oil intake. However, birds given 0.2, 1.0, and 2.0 mg. of tocopherol (vitamin E) per week were pro-



Cerebellar folium from chick with encephalomalacia. Purkinje cells have disappeared where hemorrhages are well developed. Pyknosis of the Purkinje cells is visible at the margin of the hemorrhagic area. Klüver stain.

tected to the same degree whether given the 4% or the 8% corn oil diet. A maximum "stress" appeared to be reached with 4% corn oil in the diet, since the 8% corn oil diet did not increase tocopherol need.

It appears that at the levels used, rancidity is not a factor to be considered in these studies, since the effect of oxidation of the corn oil appeared to be negligible between PN 50 and PN 100 (Table 3). A lack of such toxicity was similarly found by other investigators, who showed that soybean oil oxidized to PN 100 did not affect the growth rate or fertility of female rats.[17]

The effects of various dietary lipids, furnishing different fatty acid constituents, are shown in Table 4. There appears to be no relationship between the total lipid unsaturation, as estimated from the iodine number, and the occurrence of encephalomalacia. A high incidence was observed in birds that were fed 2.5% and 4% safflower oil, 3% and 4% corn oil, 3% and 4% soybean oil, 3.5% and 4.5% cottonseed oil, and 12% stripped lard diets, each of which furnished large amounts of linoleic acid. On the other hand, the intake of 15% butter or 20% coconut oil, which furnished very little linoleic acid, produced no symptoms. In preliminary experiments, diets containing 15% olive oil or 15% linseed oil did not produce encephalomalacia, and results with 12% of either oil in combinations with 3% and 5% safflower oil, were inconclusive. Further studies with these oils are in progress in order to determine whether these lipids are capable of either enhancing or preventing encephalomalacia.

Combinations of 12% coconut oil with 3% and 5% safflower oil resulted in an increase in the occurrence of encephalomalacia, as compared with that obtained with safflower oil alone, although coconut oil itself had no effect (Table 4). Out of 11 birds on 3% safflower oil, 7 succumbed between 21 and 30 days, whereas all 11 birds on 3% safflower oil and 12% coconut oil died between 18 and 24 days. This effect was further examined by feeding different combinations of coconut oil with commercial corn oil (Mazola) which was not stripped in vacuum, but simply aerated at 95 C to PN 100. The highest incidence of encephalomalacia was obtained with birds given 2% corn oil in combination with 7% and 10% coconut oil (Table 6). Decreasing either the corn oil or the coconut oil in the diet resulted in correspondingly fewer birds with symptoms. By way of comparison, 11 out of 15 birds developed encephalomalacia on a 4% commercial corn oil (PN 100 diet).

Comment

The results obtained suggest that the intake of any of several lipids which furnish large amounts of linoleic acid may be a primary factor in the etiology of encephalomalacia in tocopherol-deficient chicks, and that the effect of linoleic acid-containing oils may be increased by other components found in coconut oil, which is highly saturated. This modifying effect of coconut oil may present a means of evaluating the role of linoleic acid as a factor leading to the characteristic brain damage, as well as a starting point from which other modifying factors in the diet can be studied.

In a recent report by Dam et al.,[18] a diet containing 1.5% of highly purified ethyl linoleate was found to produce encephalomalacia with slight incidence of exudative diathesis, whereas a similar amount of ethyl linoleate produced exudative diathesis, but no encephalomalacia. The use of purified polyunsaturated and saturated fatty acids singly and in combinations may be expected to furnish more information about their specific roles. Preliminary results have been obtained showing that 7% lauric acid, instead of coconut oil, added to the 2% corn oil diet also increases the incidence of encephalomalacia. These studies suggest that the production of nutritional encephalomalacia is a function of at least two lipid factors in the diet—primarily, the linoleic acid content, and, secondarily, the content of certain saturated fatty acids. The demonstration that the addition of a saturated

lipid can increase the effect of polyunsaturated lipids in producing encephalomalacia shows that, in at least one instance, the inclusion of an otherwise harmless amount of a saturated lipid in the diet can be very harmful when combined with an otherwise ineffective or poorly effective amount of a high linoleic acid-containing lipid.

Summary

Encephalomalacia was produced in tocopherol-deficient chicks on diets containing safflower, corn, soybean, and cottonseed oils or lard. The effects appeared to be related to the amounts of linoleic acid in the fat used. Coconut oil and butter, which are low in linoleic acid, did not produce similar symptoms. Four per cent corn oil produced an incidence of encephalomalacia of over 80%, and the tocopherol intake needed to reduce or prevent encephalomalacia was decreased with correspondingly lower percentages of corn oil in the diets. The addition of coconut oil to diets containing minimal or partially effective amounts of safflower or corn oil increased the incidence of encephalomalacia. Histological examinations of chicks with symptoms of encephalomalacia showed that hemorrhages in the cerebellum are preceded by pyknosis of the Purkinje cells.

Biochemical Research Laboratory, Elgin State Hospital.

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Time Perspective and Intimacy

Their Effect on Patient Behavior in Occupational Therapy

CYNTHIA BOARD, O.T.R.; JANE KING, O.T.R., and ANNA MARIE TIERNEY, O.T.R., with PHILIP LICHTENBERG, Ph.D., Chicago

Introduction

In recent years, with the development of an active milieu program at the Institute of Psychosomatic and Psychiatric Research of Michael Reese Hospital, the use of the Department of Occupational Therapy gradually changed: Larger numbers of patients were treated at one time; the staff became involved in more activities on the unit, and there were more planned patient activities away from the hospital. To facilitate this extended program, it was necessary to concentrate on groups, as well as individual patients. In order to understand these new needs, a series of seminars was begun concerned with the theory and practice of intragroup relationships. It was hoped that the seminars could be useful to the development of occupational therapy for three reasons: 1. Collective activity being necessary to the functioning of occupational therapy, an understanding of the conditions favorable to integrating groups and to handling groups once formed is vital. 2. The apparent important similarities between a person's relationships to things and to people suggested further analysis so that proper tasks could be provided and the occupational therapists would be able to predict and account for likely social problems and conflicts. 3. It was hoped to find some procedures which would enable the occupational therapy staff to draw individuals into group interaction so that their achievements could lie in the realm of social activities and interpersonal relationships.

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From the Institute for Psychosomatic and Psychiatric Research and Training of Michael Reese Hospital.

For about a year we devoted our weekly seminars to considerations regarding time perspective and intimacy as two facets likely to be productive for us. We explored some typical distortions in time perception from our own lives which we felt would enable us to come to personal grips with the ideas we were to investigate. After some analyses of so-called normal distortions, we centered our interest on case descriptions taken from the point of view of time perspective. We then observed (and intervened in) some group endeavors that we hoped would be relevant to time and intimacy. These three stages encompassed a distinct period of the seminar, and, for that reason, we are trying in this report to give some picture of the results of this period. The remainder of the report follows the unfolding interests noted above.

Time Perspective and Intimacy in Normal Living Experiences

We may best illustrate time perception and its distortion by examining some rather typical living experiences. Most students and teachers have felt the panic involved in cramming for final examinations, when much has to be learned in little time. Even the short time that remains is encumbered by a paralysis associated with trying to do too much too quickly. Although the *time available* to study is actually less than the *time needed*, it is perceived as even shorter by the student. Obviously, here is an experience in which a person's perspective of time available is distorted owing to stress and appears to be less than it actually is.

This experience of shortened time perspective is closely related to a prior experi-

ence of extended time. At the beginning of the semester, final examinations seem so far in the future that planning for them seems ridiculous. Study is put off, but there is an increasingly frequent feeling of "I ought to study" as the semester goes by. At the beginning, thus, the perceived time available is exaggerated in comparison with the time needed.

Some people respond to this situation with a realistic evaluation of what has to be done and how long it will take. Others, the "crammers," continue to distort the relationships between time needed and time available. They overemphasize the time available until actually there is very little time left and further distortion in this direction of extended available time is difficult. At this point apathy changes into panic.

A fire in a crowded building is a good example of how panic comes from distortion in time perception in a group situation. The spread of fire makes available time short. In order to evacuate the building, rapid organization of all individuals is necessary. If some few people carry with them a tendency to overestimate the time needed to organize a group for evacuation and if they are allowed to act on this, then panic is an inevitable outcome. The "time distorters" will try to save themselves, to the detriment of the group. This lengthens the time needed to organize them within the group, leaving less time for carrying out the task of evacuation. Thus, a few people who misperceive time and who panic cause others to believe that individual effort is the only possible way out.

The preceding examples of situations in which time perception is an important variable demonstrate how most activities involve planning and require the individual to organize the world within a time dimension. To the extent that time is consistently misperceived, the person's planning will be unreal and he will suffer the consequences. His ability to coordinate himself with others will be impaired. We have emphasized these problems of planning and coordination in our analysis of patients' activities and behavior in occupational therapy, because of our interest in evaluating patients' distorted time perspective by experiences in individual and group activities.

The second problem was that of intimacy. We defined an intimate relationship as one in which the fundamental needs of the participants can be expressed. The degree of intimacy which is appropriate with a stranger is not usually successful or appropriate with one's family and vice versa. Similarly, if one isolates himself from others, he becomes, in a sense, too intimate with himself. The degree of intimacy refers to the level of integrated needs brought into a situation. Everyone needs solitude and time to evaluate his own behavior, but he must also have external checks from others as to whether his evaluations and ideas are correct. Too much private time spent in the attempt to integrate internal dissensions causes new and irrelevant needs to arise, which are then compounded with the initial problem, creating an excessive degree of intimacy.

The simultaneous expression of many needs of the personality in a relatively few actions constitutes intimate behavior. For example, the child necessarily relates to his mother on an intimate level. Because his personality is relatively undifferentiated, he is necessarily intimate most of the time. He cannot select actions that are appropriate and keep these distinct from actions that are inappropriate. He learns selectivity as he grows. The mature adult has learned to be intimate under prescribed conditions. He has learned under what circumstances satisfaction of his basic needs is appropriate. These involve the adjustment of his basic needs with those of the person with whom he is interacting. It takes considerable knowledge about the other person to be sure that the satisfaction will be mutual.

Time Perspective and Intimacy in Patient Activities

With the hospitalized psychiatric patient, the degree of intimacy that he can tolerate

and the demand for intimacy that is necessary for group situations often lead to conflict and difficulty and interactions. The distortion of time perspective in hospitalized patients is noted in attitudes of "All must be accomplished today, for tomorrow is far away," or "Why do anything? I'll be like this forever." With the aim of portraying these influences on the relationship of patients to their chosen tasks and to other people while in occupational therapy, we present the following three cases.

CASE 1.—Mrs. A., aged 21, a white woman, first manifested bizarre behavior three days before she was admitted to our hospital. The demands made upon her by her marriage and the loss of the emotional support of her parents were felt to be the precipitating causes of her illness. In the early days of her hospitalization the patient was hyperactive, provocative, and seductive. Gradually her behavior changed, until she appeared somewhat depressed at the end of her three months in the hospital.

The patient spent a considerable amount of time in occupational therapy, engaged in frantic activities. She tended to do everything at once, trying to talk, drink coffee, and work on projects. She spent much of her time knitting simple, quickly completed items for herself. On a typical day during her first month of hospitalization she would knit for a short period, play pool, knit again, play the piano, socialize with male patients, and then repeat the cycle. Concurrently she would talk, sing, chew gum, and smoke. When the occupational therapy sessions were over, she carried supplies to the unit, where she worked on projects in the evenings.

Her first project, in which she learned a new skill and needed instruction, was the covering of a velvet belt with many leather snaps in a decorative fashion. What seemed striking was the fact that this repetitive task held her attention for a sustained period. After this project, in which small repetitive actions led to a successfully completed object that gained praise from others, the patient returned to knitting. At first she made things that were quickly completed and somewhat bizarre. Gradually she began projects of longer duration, increasing in appropriateness and complication. Her social behavior reflected this development of her relationships with material objects.

Early in her hospitalization, because of her bizarre behavior, she was excluded by other patients from taking part in the planning and performance of a skit. In retaliation, she announced she would put on a show of her own. Her behavior with respect to the party was similar to that which we have already described in regard to her work activities. Toward the end of hospitalization, she was included in the planning of a party. Both of these experiences will be described later.

CASE 2.—B., a single, 27-year-old woman, the oldest of three children, described herself as "a nothing." During the three years preceding her hospitalization she remained at home with her parents, not working, becoming more and more preoccupied with herself, and suffering attacks of extreme anxiety without apparent cause. The staff diagnosed her as manifesting a chronic schizophrenic reaction with hypochondriacal defenses, characterized by withdrawal, denial, avoidance, and preoccupation.

This woman chose knitting a scarf as her first project, but only after practicing the process for many days. She demanded complete attention from the personnel members helping her and repeated simple, basic instructions. If these instructions were given in a manner that the patient considered too rapid, she would become anxious, angry, and confused. Unless this situation was dealt with immediately, she would end the activity and ask to be returned to her unit. She refused to accept help from anyone other than an occupational therapist.

She solved the problems of the scarf by first learning the initial pattern and then repeating this until the scarf was completed. When she had completed the scarf, she was obviously pleased with her work and showed it to the staff and patients in what was felt to be a quest for praise and approval. She claimed it to be the first object she had ever completed. When the scarf was finished, she was reluctant to begin another project, and she came to occupational therapy only to iron clothes. Here, too, she was at a complete loss and repeated her previous behavior of demanding instructions and constant support, leaving the department if these were not immediately forthcoming.

Her next efforts were working with leather. In these projects, too, she was demanding of the occupational therapist's time and did not proceed unless she received detailed instructions, which had to be repeated over and over again. Only when several projects were completed, all involving the same steps that she had learned initially, would the patient attempt to proceed on her own, still requiring the assurance, however. She made a great number of leather objects, using the same simple stitches again and again. Knitting, ironing, and leather work were her major activities in occupational therapy. She did not become involved in any type of group activity. Her contacts were limited to one other patient on her unit and the hospital staff.

CASE 3.—C., a 22-year-old single woman, a college student, had appeared well until two days prior to her admission to the hospital. At that time she and her fiancé broke their engagement. Since her mother's death, a year before, C. had felt depressed, angry, and deserted and had attempted to take her mother's place in the family. Loss of the relationship with her fiancé intensified the frightening, seductive relationship she had assumed with her father. On admission she was delusional, loud, and bizarre, with manic-like behavior, which thinly covered her depression. Her hospitalization lasted approximately two months.

When this young woman first came to occupational therapy, she would flit from one activity to another and was unable to concentrate on one particular project. When there was too much stimulation in her environment, she would be unable to take in all of the details, and would complain of a headache and withdraw. At these times she would complain that everything moved too fast. However, she did well on her first project, weaving a rug, as long as one person assisted her without interruption.

Upon completion of the rug, C. was pleased with the results, but was reluctant to start a new project. When she did, she chose a "woolly animal" and asked for a great deal of assistance with it. The patient then began many projects, few of which she completed. Following this period she began to work on a leather cigarette case. This task involved a repetitious but simple lacing stitch. She continued to insist that she needed much supervision and had difficulty sticking with it to the end. With much support she finally completed the project, although it required more time than anything she had previously made.

Her self-chosen activity was the continuation of some knitting begun by her mother before she had died. The patient started other knitted items, which she would work on sporadically, saying that she did not want to knit anything that would be a finished product; she wanted only "to practice." At this time the patient was discharged, for financial reasons.

Time Perspective and Intimacy in Group Activities

Three group situations have been observed in a like manner. The first was a party superficially successful but of questionable therapeutic value. It was entertaining; people had a good time, and they discussed it in days to follow as having been an enjoyable experience, but the instigators expressed disappointment and frustration. The second party was less entertaining for the "guests," but gratifying to the patients who planned and presented it. The third social situation was a spontaneous party, with much ebb and flow during its planning, which resulted in an enjoyable and therapeutic experience for those involved.

The first party came about spontaneously when a small group of patients decided to give a party for the departing student nurses. The patient group consisted of young people of about the same age, interest, degree of disturbance, and length of time in the hospital (five months), and all anticipated extended hospitalization. They were a closely knit group and spent the majority of their waking hours in one another's company. A great deal of enthusiasm, time, and energy were invested in the party, their first action being the planning of a skit mimicking the staff. Several meetings were held, of which this was the sole content. The instigators imitated each other's doctors, other members of the staff, all the occupational therapists, and even some of the more colorful patients. As the skit began to take a definite shape, the group became more secretive about it. When the first formal rehearsal took place, the skit was found to be much toned down. Only staff members who were very well known were mimicked, but the group had retained much of the spontaneity, the mimicry, keeping its near-embarrassing accuracy of gestures and personal clichés, such as one staff member's pulling up her knee-length hose and another's deliberate manner of smoking a cigarette. However, when the skit was performed at the party, the aggressiveness (the basic substance) had been deleted. The only way the "staff" could be identified was by the "actors" calling each other by name.

Immediately after the performance, the "actors" expressed disappointment. This diminished somewhat upon the reception of praise from the audience, but the elation of the days preceding the performance did not return. They did not seem able to maintain

the intimacy that they had attempted with one another and with the staff, and they withdrew from the staff as though expecting retaliation for the hostility they had been expressing. We conjectured that their distorted time perception caused their fear of rejection to equal a fear of loss of the hospital home. In their distortion they could imagine hospitalization only as continuing on into the future, and their attempt at intimacy (by aggressive testing, i. e., teasing without fearing rejection) could result only in one thing—their destructiveness would be answered by their destruction. All their needs for dependency tended to emasculate the impersonations and force them to be passive and "good"; so their first reaction after the performance was one of disappointment and frustration. In discussing this in the seminar, it was felt that had the time lapse between the conception of the idea and the skit presentation been shortened, the irrelevant conflicts about the spontaneous emotions, with their personal content, would not have developed. Here was an instance of too much intimacy being allowed by the time lapse, with clouding of the original intentions.

The second party was not as appropriate as the one just described. A., having been excluded from the group that had given the skit, decided to give a party of her own, replacing with quantity what the others had had in quality. She tried to involve the group of young people referred to above and was rebuffed on many occasions, whereupon she would return to her planning with great intensity, adding new songs, costumes, and skits. She began her planning immediately after the "skit" party, and the longer she planned the more elaborate her planning became. She could work only with patients of about the same degree of disturbance as hers, and even then she could not tolerate the waiting necessary while others performed, a problem she solved by taking part in everything. If she was not singing a solo, she was singing a duet; or if not singing, she was accompanying the performer on the piano and usually playing louder than they could sing. Quite soon it became obvious that her planning would need to be limited. The program was cut down from one and a half hours to a half-hour, and the costumes were eliminated. This called for a great deal of firmness on the part of the occupational therapist, who needed to withstand A.'s testing of the limits thus set down and the occupational therapist's motivation for doing so. It was hoped to make it possible for her to get some return from the experience and the audience by limiting her investment of time, energy, and fantasies, the impossibility of the tremendous recognition she expected for the original extensive, almost telethon-like, effort she was prepared to make being obvious.

The last of this sequence of social activities was a party planned by a large group of patients who agreed among themselves that a party should be given. The group consisted of the group who planned the skit, A., and some new patients. They worked efficiently together, dividing into committees, and the committees appeared to function well. The first sign of tension became apparent at the coordinating meeting when it was necessary for the committees to take turns in reporting. Patients began to argue with one another about what they felt to be personal affronts. At this point the occupational therapist intervened, concluding the meeting so as to preserve the intergroup relationships which were being taxed by the increasing intimacy brought about by extended planning. The committees continued to meet, but in a less intense atmosphere—in fact, almost surreptitiously——on the units. It seemed that when the difficult interactions in a formal situation were cut short, small groups of patients, comprising committees, could work together to the extent of their mutual toleration, and interaction could be more appropriately superficial and therefore congenial. The party, when given, went smoothly, and the patients seemed to accept it as a pleasant experience rather than a critical event in their hospitalization.

Comment

One of the characteristics common to the patients that we have studied is their trying to do many things during a limited period of time. The short span of attention reflects a time perspective which sees satisfaction only in the immediate experience. Whatever satisfaction they anticipate on any single activity must be forthcoming quickly. Thus, the short time perspective limits their involvement in any single activity, limits the complexity of the activity with which they can deal, and limits the demands of the activity upon them. Thus, while it permits some gratification, it impedes their full realization of the potentialities inherent in the experience. Given the short time perspective in patients, the occupational therapist must find activities which will fit this limitation and will also give the patient satisfactory experiences.

In each case we discussed, there was a constant demand for immediate, exclusive assistance. As we have described, the patients frequently asked the occupational therapist for assistance; and if met with any delay, they would be enraged and direct their anger toward the occupational therapist or internalize the anger and withdraw from the situation. The explosive behavior can be considered as the more positive of the responses, for it revealed that the patient was still working on the task, and attempting to exert maximum power toward involving an expert in the achievement of the goals. The explosion was a very direct manifestation of the perception that satisfactions must be obtained immediately or not at all, and the patient exerted his energies maximally to gain this satisfaction. The withdrawal represented the other side of this perception. Since achievements could not be realized immediately, the patients perceived that they would never be obtained. Withdrawal, therefore, is abandonment of the goal.

While the shortened time perspective of these patients limits their activities to those in which gratification is more rapidly achieved, the patients' own attempts to extend time perspective without becoming overly involved in any more demanding activity lead them to repeat the same activity in new surroundings. Such attempts were observed when patients began to take their projects back to the unit. In contrast to frequent change of activity during any one period of time, such behavior reflects the maintenance of a single activity, although repetitive, over extended time.

Persons with short time perspective often find a repetitive task rewarding. For example, on the matter of putting snaps on the belt, each step in the task can represent an achievement in itself. This means that the person can be satisfied and, in a sense, experience success. Since each step is an achievement, the patient accumulates many successful experiences. In conjunction with this accumulation of achievements, the patient finds it possible to begin to plan for the future, even though such planning consists only in making a decision as to where the next one, two, or three snaps should go. This activity has led to success in the past and promises success in the future. Thus, the patient is provided a chance for lengthening his time perspective, which is a positive value to the striving patient. There are limitations to this positive aspect, however, in that the achievement of such success often results in what might be called a "success pattern." For example, B. did not want to attempt activities other than the knitting, which she found gratifying. To any suggestions that were made that she try a more difficult knitting pattern, she replied, "I can't do it." She has repeated one process again and again and has found it gratifying. She is bound to it because it gives her desired and undeviating success.

Advantageous aspects of the repetitive task are its predictability and the elimination of inhibiting frustration. On such tasks there is little need for adjustment after the initial learning process. This means that the patient can know what is before him.

It has the added advantage that the patient can become independent of the staff in his activities. This means a lessening of frustration caused by not being able to get the immediate and individual attention of the staff.

The group activities also were affected by the patients' distorted time perspectives. In the first party we see that the patients with similar time perspectives regarding hospitalization were using the hospital activity as though they tended to conceive of their lives only in the hospital. The group activities were directed toward making the hospital more gratifying and not directed toward living in the community or toward making them able to depart from the hospital.

Another way of describing occupational therapy activities involves the concept of intimacy and how much of the person enters into the transaction between the person and things or the person and people.

The activity style of flitting from one task or game to another, without staying at any one for any extended time, can be seen as a reflection of disturbance in the ability to integrate many needs around a single form of behavior. Everything or every person in the patient's environment has many potential meanings for the patient. There are many different satisfactions to be obtained from any single object. The inability to stay with the object for an extended period of time, which the flitting behavior reveals, means that the patient can obtain only limited gratification from the object. It is as though the patient must satisfy one need at a time. Since every person always has many needs operating at one time, the patient must rapidly consume objects to gain adequate satisfactions. For this reason the patient cannot become intimate with any single object. Even when there appears to be very personal contacts with others, as when A. flirted with the male patients, the brevity of the seduction scenes makes them very lacking in intimacy.

The constant demand for assistance from the occupational therapist can also be seen from the vantage of intimacy analysis. The patient feels that if he is left to his own devices in work he will bring too much of himself into the task, thus creating his own frustrations. The project must be perfectly made, beautiful in appearance, meaningful to everyone around him, and so forth, because it represents all of the patient's worth to the outside world. This is the obverse of satisfying each need with a new object. The one object must now serve all needs which the patient experiences while working on it, whether these needs are appropriate or not to the task.

Demanding constant assistance from the staff is a compromise between the tendency to be either too intimate with an object (i. e., asking more satisfaction from it than is feasible) or too lacking in intimacy (i. e., trying to find single objects for every need). The occupational therapist is given the role of keeping the patient from vacillating between these two extremes.

Our best examples of the problems arising around the intimacy area occurred in two of the parties. In the first party, as we have described it, the patients who had been in the hospital with one another for some time, and were familiar with one another and with the staff, spontaneously prepared a party. Their initial plans, which they acted out as they were planning, involved subtle and intricate parodies on the foibles of the staff. The spontaneity of the original plans diminished as time went by, so that when the party was given a week later, little remained. For one thing, the patients had a chance to reflect on their spontaneous behavior, and in doing so they discovered how very intimate they had been in their characterizations. This was frightening to them and caused them to withdraw from it. For another thing, as time went by, new wishes came up which they inappropriately tied to the party. Since this was a big event for them, they brought much into it; and in doing so they asked more from the party than it could possibly give to them. As they had been too intimate at first, they could not now prevent them-

selves from becoming even more involved without changing the structure of the party. The modified plans changed the party, and therefore the patients' attitudes toward it. Immediately after the skit they were rather depressed, but audience approval reassured them that at least socially they were successful, even though their initial needs were not met.

It can be noted here that this analysis led staff to intervene in the planning of the third party. In order that the spontaneity of the party be preserved, any large, collective planning activity was postponed until only a few hours prior to the event. In this way the intrusion of many extraneous needs and desires of the patients, which most certainly would have arisen, as they had in the prior situation, was forestalled.

This decision was indicated in the third party by a second example of distorted intimacy. We did permit subgroups to organize and plan for this affair, but the troubles that arose here made us ban all major planning. When the first subgroup met, A. wished to have her part in the committee planning come first in the discussion. When this proposal was denied, she left the group until they were ready for her. During this time interval she accumulated new tensions. She passed from the realization that everyone could not speak at once if order was to be maintained to the fear that she was not permitted first discussion because the group felt hostile to her. Thus, when she returned to the meeting, she was prepared to interpret any remarks as an attack upon herself. When she reacted as though this were the case when she returned, she aroused many personal needs of the remaining members of the group. At this point, the patients fell into a hostile, personal discussion and the group fell apart. The party planning was lost in the intimacy of the discussion. As a result of this disruption, further group planning was inhibited.

In several subsequent parties the same disruption was found. It seems that patients perform least well when they are trying to organize to perform some coordinated activities, for at this time they are engaged in merely talking with others about what they will be doing. Almost invariably this kind of discussion gets involved in personalities and leads to disturbance. If patients are working with things at the same time that they are planning, their interpersonal relations are less likely to disintegrate. In the same way that patients use projects to establish relationships with an occupational therapist by demanding help, they control their intimacy difficulties in interpersonal settings.

Summary

In studying occupational therapy activities from the point of view of time perspective and intimacy, the following observations were made.

With Individuals

Patients attempted to perform many activities in a limited period of time, seeing gratification possible only in the immediate experience.

Patients cannot center many needs on one object and therefore must use many objects for their many needs.

In attempting to extend time perspective, patients took occupational therapy activities to the units.

The demand for immediate help and the intolerance of delay are reflections of seeing success and gratification possible only in the immediate experience, and the most effective mode was to receive help from "an expert."

By bringing another person into the activity, the patients lessen the threat of intimacy with the object and the need to center their gratifications there.

The intimacy is lessened when the task is learned and demands less of the patient and decreases involvement with the product.

Repetitive tasks offer repetitive successes and immediate gratifications. The frustration of delay is eliminated when the need for assistance is not imperative.

In Groups

The time perspective of patients with comparable degrees of disturbance is similar.

When too much time is allowed to elapse between the initiation of an activity and the production of it, the patients lose sight of the original objective. By allowing less time for planning, the staff allows the spontaneity of the group to function, and the gratification of the patients remains in more appropriate dimension.

Extensive planning necessitates extensive cooperation and a need for more intimacy, leading to dissolution of the group and loss of sight of the original goal.

Institute for Psychosomatic and Psychiatric Research and Training, 29th St. & Ellis Ave. (Dr. R. R. Grinker).

Peripheral Thyroxine Metabolism in Patients with Psychiatric and Neurological Diseases

SEYMOUR REICHLIN, M.D., Ph.D., St. Louis
With the Technical Assistance of Mtanios G. Koussa, A.B.

In the search for metabolic causes or manifestations of schizophrenia, much attention has been paid to the abnormally low oxygen consumption rate which is found in the majority of schizophrenic patients.[1-7] This disturbance is not caused by thyroid-gland hypofunction, as is shown by normal thyroid radioiodine uptake or plasma protein-bound iodine in most schizophrenics.[7-17] Evidence that the thyroid gland is not necessarily responsible for hypometabolism in schizophrenics comes also from the observation that a few patients appear able to tolerate enormously large doses of thyroxine or thyroid extracts without manifesting thyrotoxicosis.[5,18,19] These findings, if they are generally applicable, indicate, among other possibilities, that in schizophrenia there is a depression of tissue responsiveness to thyroxine effects, as suggested by Hoskins,[5,6] or that there is an abnormality of thyroxine metabolism in these patients.

The hypothesis that there is an abnormality of thyroxine metabolism in schizophrenics has been tested in the following studies by measuring the rate of thyroxine degradation in patients with acute and chronic schizophrenia and comparing these results with values obtained in normal subjects. In order to determine whether or not these changes were specific for schizophrenia, or were related rather to prolonged hospitalization or to the inactivity which is so commonly seen in deteriorated schizophrenics, patients with other kinds of psychotic illness and patients with crippling neurological disease were also studied.

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Departments of Medicine and of Psychiatry, Washington University School of Medicine.

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Methods

Patients from the Washington University Outpatient Clinic, the Renard Hospital, the Malcolm A. Bliss Psychopathic Institute, and the St. Louis State and St. Louis Chronic Hospitals were used in this study.

Thyroxine turnover rate was determined according to the method of Sterling and Chodos,[20] modified in that the graphic estimation of plasma thyroxine half-time was made from a line drawn by the method of least squares. Serial measurements of plasma radioactivity were made in a well scintillation counter at one- or two-day intervals, beginning 24 hours after the intravenous injection of 25μc. to 50μc. of I^{131} labeled L-thyroxine.* There were eight or more individual determinations for each curve in most instances and no fewer than six determinations in any curve. Correction for physical decay was made by comparison with a standard dilution of the injected dose. Plasma thyroxine turnover rate, in per cent per day, was calculated by use of the formula $K=\frac{0.693}{t^{1/2}}$. Plasma protein-bound iodine (PBI) was determined by the method of Barker et al.[21] Quantitative calculations of the thyroxine distribution space, extrathyroidal organic iodine pool, and daily thyroxine degradation were not made because accurate stool and urine collections were not possible in the majority of cases studied, and the simpler method, which uses extrapolation of thyroxine disappearance curves to zero time,[20] is subject to a number of errors.[22,23] In 16 of the cases thyroid function was estimated by measuring with conventional methods thyroid I^{131} uptake 24 hours after the oral ingestion of 25μc. of I^{131}.

Categories of Subjects

Control.—This category consisted of 16 paid volunteers from the nursing and attendant staff

* Abbott Laboratories, Oak Ridge, Tenn.

of St. Louis State Hospital. Their ages covered the range of ages in the patient group, and they spent their working days in the same environment as the patients. One otherwise healthy woman in the group was taking 45 mg. per day of desiccated thyroid as part of a reducing regimen for mild obesity.

Chronic Deteriorated Schizophrenia.—Four patients with predominant catatonic features at the time of admission and four unclassified schizophrenics form this group, all characterized by deterioration in behavior to vegetative or near-vegetative levels, despite full trial of various forms of therapy. The four men and four women ranged in age from 45 to 64, had been ill from 10 to 47 years, and had been hospitalized continuously from 10 to 44 years. These patients were extremely inactive, uncommunicative, or mute. None of the catatonic patients in this group were stuporous or excited at the time of the study.

Paranoid Schizophrenia.—Seven paranoid schizophrenics were studied. Three women and one man were tested within two weeks of hospitalization. Each had shown increasing suspiciousness over the preceding year or two, and had been getting much worse for several months prior to admission. Hospitalization in each case had been precipitated by a sudden outburst of aggressive or bizarre behavior. These acutely ill patients were extremely active and excited on the ward. Three more chronic paranoid male schizophrenics were studied with severe disturbances of 37, 21, and 1 year's duration, respectively. They had adjusted to the hospital routine, but continued to have delusions, and showed bursts of hyperactivity and excitement at intervals during the study.

Catatonic Schizophrenia.—Measurements were made in three catatonic men during a prolonged period of stupor with rigidity, mutism, posturing, and waxy flexibility. Two of these had the typical seborrhea of severe catatonia and had been ill for 9 and 11 years, respectively. The third patient, aged 40, was in the 10th relapse of cyclical catatonia of 26 years' duration.

Chronic Undifferentiated Schizophrenia.—Heterogeneous symptomatology with predominant paranoid and catatonic features characterized this group of one woman and nine men. The age range was 25 to 55 years, the duration of illness 5 to 28 years, and the duration of hospitalization 1 week to 28 years. Two of the patients were hypomanic, and had rush of speech, clang association, and tangentiality.

Mental Deficiency with Psychosis.—The five men in this category ranged in age from 28 to 70 years and had been psychotic between 6 and 48 years. With one exception, these patients presented an appearance similar to that of the chronic deteriorated schizophrenic group in that they were uncommunicative and led vegetative or near-vegetative lives. The psychosis developing in these mental defectives was generally similar to the schizophrenic type.

General Paresis.—Ten patients with general paresis, three men and seven women, were studied. Six of the patients worked at the hospital five days a week on "detail" in the laundry or kitchen but were unable to make an adjustment outside the hospital. Four of the patients were severely deteriorated, with marked intellectual loss. Of these, three were extremely inactive and required close supervision of feeding and toilet.

Mental Deficiency.—Four patients, one man and three women between 34 and 50, were confined to bed or chair by severe imbecility. One of these had suffered a mild hemiplegia, and one had been in bed for her entire life of 37 years. All required feeding help but were in good nutritional state.

Para- and Triplegia.—The six patients in this category had been confined to bed or wheel chair for long periods of time (3 to 31 years, with four patients confined for 5 or more years) by paralysis of both legs due to trauma, multiple sclerosis, syphilitic myelitis, or congenital myelopathy. Three had, in addition, paralysis of one arm, and one patient had had disarticulation of the hip for severe flexor spasm and a prefrontal lobotomy, as well for intractable pain.

Miscellaneous Disorders.—Three patients with advanced Parkinson's disease, all of whom showed tremor and rigidity; one with Huntington's chorea with severe mental impairment; one with simple schizophrenia; two with hebephrenia, and one with severe obsessive-compulsive neurosis of

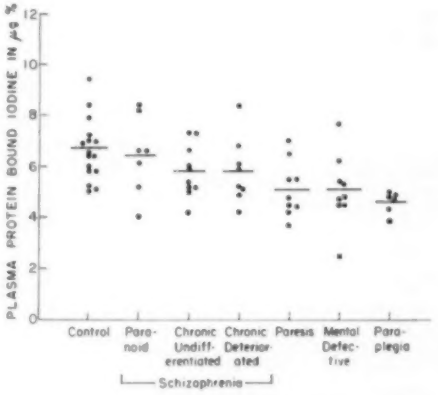

Fig. 1.—Plasma protein-bound iodine in psychiatric and neurological diseases.

This figure is a scatter diagram of values obtained in various categories of psychiatric and neurological disease. The straight line indicates the mean of the values.

TABLE 1.—*Plasma Protein-Bound Iodine and Plasma Radiothyroxine Turnover in Normal Subjects and in Patients Suffering from Psychoses and Neurological Diseases*†

Group	No. of Patients	Protein-Bound Iodine, μg. %			Radiothyroxine Turnover, %/Day		
		Mean	S. D.	Range	Mean	S. D.	Range
Normal control	16	6.7	±1.1	5.1-9.4	9.7	±1.2	8.0-12.6
Schizophrenia							
Paranoid	7	6.4	±0.4	4.0-8.4	11.7 **	±2.1	8.4-14.8
Chronic undifferentiated	10	5.8	±1.03	4.1-7.3	10.2	±2.0	8.2-13.6
Chronic deteriorated (catatonic and unclassified)	8	5.8	±1.3	4.2-8.4	9.7	±1.9	6.5-12.8
Catatonic stupor	3	5.5	--	5.3-5.7	10.2	--	8.9-12.6
Hebephrenia	2	6.2	--	6.1-6.3	10.7	--	9.0-12.4
Simple	1	6.6	--	--	8.4	--	--
All schizophrenics	31	6.0	±1.2	4.0-8.4	10.4	±2.1	6.5-14.8
Mental deficiency							
Severe dementia and inactivity	4	4.2 **	±1.2	2.5-5.3	11.1	±1.8	9.1-13.3
With psychosis	5	5.8	±1.2	4.7-7.7	10.7	±1.7	8.9-12.6
All mental defectives	9	5.1 **	±1.4	2.5-7.7	10.9 *	±1.7	8.9-13.3
Paresis							
With severe dementia	4	4.3 ***	±0.5	3.7-4.8	9.5	±3.2	7.2-14.1
Physically active, mild dementia	6	5.8	±1.0	4.4-7.0	8.7	±2.2	5.8-12.6
All cases of general paresis	10	5.1 **	±1.1	3.7-7.0	9.0	±2.5	5.8-14.1
Neurological disease with paraplegia	6	4.5 ***	±0.6	3.5-5.0	10.8	±1.2	8.9-12.0
Parkinson's disease	3	6.4	--	5.4-8.0	10.3	--	9.7-11.2
Obsessive-compulsive neurosis	1	6.9	--	--	9.8	--	--
Huntington's chorea	1	4.1	--	--	9.6	--	--

† Statistical comparison is made of protein-bound iodine and thyroxine turnover between the normal control group and the other groups. *P* values are indicated by asterisks, as follows: * *P* 0.05; ** *P* 0.01; *** *P* 0.001.

three years' duration, with almost constant anxiety, were studied.

An effort was made in this study to avoid the use of drugs during the period of measurement of thyroxine turnover. This was not possible in four patients with paranoid and three with chronic undifferentiated schizophrenia, and in the one case of Huntington's chorea. These patients received up to 300 mg. per day of chlorpromazine or 3 mg. per day of reserpine.

Results

Protein-Bound Iodine.—With few exceptions, the majority of schizophrenic patients had PBI values within the range of the control group—(5.1μg. to 9.4μg. %). (Fig. 1; Table 1). No values were encountered in psychotic patients which were above the highest level in the normal group, and the exceptions were those below the lowest normal value. Within this normal range, however, PBI values were highest in paranoid patients and tended to become lower in the chronic undifferentiated, chronic deteriorated, and catatonic groups. These differences were not significant statistically. Patients with general paresis taken as a group had significantly lower mean PBI values than the normal controls ($P<0.01$), and 4 of the 10 had values below the lowest normal, although these are still in the range considered normal for this laboratory (4.5μg. to 8.5μg. %). Within the paretic group, those patients with severest disease, who were inactive and severely demented, had the lowest values for PBI. Chronically institutionalized mental defectives with and without psychosis, many of whom were bedridden because of imbecility, taken as a group had lower than normal PBI values ($P<0.01$), five out of nine having values below the lowest normal value, but one only having below the lowest value for normal seen in this laboratory. This patient, a 36-year-old woman, did not have a goiter, and had no other stigmata of endocrine disease. She had mild hemiparesis of two years' duration, and her 24-hour I^{131} uptake after oral ingestion was 50% of the dose. The most striking depression of PBI was found in the group of para- and triplegic patients who had been in bed and inactive

for long periods. The mean PBI was significantly less in these patients than in the normal (4.5μg. *vs.* 6.7μg. %; $P<0.001$), and five of the six had PBI values below the lowest of the normal group. One patient only had a value below the lowest normal of this laboratory (3.5μg. %). This patient was a 37-year-old Negro woman who had been bedfast since the age of 6 years with spastic paraplegia, leading to an advanced degree of contracture. She was in good general health, however, was alert and active in bed, had no clinical stigmata of thyroid disease, and had a radioidine uptake at 24 hours of 28.0%.

The three patients with Parkinsonism had normal values for PBI. Two had a normal basal metabolic rate, while the third had the characteristically elevated BMR of the actively shaking patient (+30%).

Plasma Thyroxine Turnover.—With the exception of the group of mentally defective and paranoid schizophrenic patients, the mean plasma thyroxine turnover was not significantly different from the normal in any of the groups studied. The mean turnover for paranoid patients was 2.0% per day faster than the mean for the controls ($P<0.01$), and 6 of the 7 patients had turnover rates faster than all but 3 of the 16 control patients. A uniform finding in all schizophrenic groups, mental defectives, and patients with general paresis was the much greater range of values as compared with the control range. The increased range of values for certain of the diseased patients was compared with the normal range by an analysis of variance.[24] Values for both the schizophrenic group, taken as a whole, and the group of patients with general paresis were significantly more variable than the control rate (2.5% level of confidence).

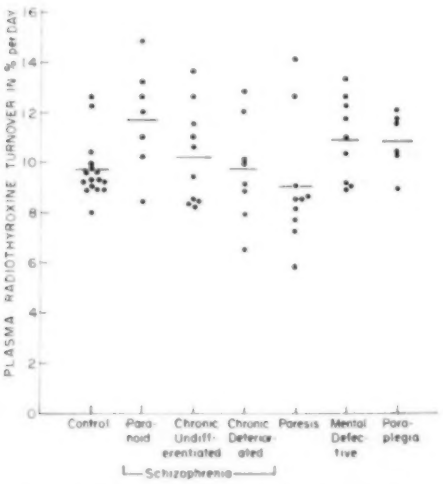

Fig. 2.—Plasma radiothyroxine turnover, in per cent per day, in psychiatric and neurological diseases.

This figure is a scatter diagram of values obtained in various categories of psychiatric and neurological disease. The straight line indicates the mean of the values.

Despite expectations to the contrary, turnover time in paraplegic and deteriorated bedfast imbeciles was not less than normal. In fact, mental defectives tended to have higher than normal plasma thyroxine turnover rates. Means for the most retarded defectives were 11.1% per day *vs.* 9.7% per day for the control group. Of 9 mental defectives, 6 had turnover rates higher than all but 3 of the 16 normal controls.

Turnover rates slower than the lowest normal value were found only in the group of chronic schizophrenics with severe deterioration and in the paretic group. Means for these groups were not different statistically, but there is a statistically significant increase in variability in these groups. Of 10 patients with general paresis, 7 had turnover values below all but 1 of the 16 controls, and 3 of the 8 chronic deteriorated schizophrenics had values below all but 1 of the 16 controls.

TABLE 2.—*Twenty-Four-Hour Thyroid I^{131} Uptake in Chronic Deteriorated Schizophrenics, Mental Defectives, and Paraplegics*

Group	No.	Age, Yr.	I^{131} Uptake, % Mean ± S. E.		Range
Paraplegics	7	31-52	29.2	1.6	20.8-32.3
Mental defectives	4	33-70	34.8	5.4	26.8-50.0
Deteriorated schizophrenics	5	31-57	31.1	2.6	21.1-35.8

Radioiodine Uptake.—Twenty-four-hour thyroid I^{131} uptake was measured in seven patients with paraplegia, in four mental defectives, and in five deteriorated schizophrenic patients (Table 2). All values were within the commonly accepted normal range of 24-hour uptakes for this laboratory (15%-45%), and the means of the three groups were not significantly different from one another.

Comment

Normal subjects in this study had plasma protein-bound iodine levels [12,25] and plasma radiothyroxine turnover rates similar to those found by other investigators. Radiothyroxine turnover time in this group of men and women, attendants, and nurses, varying in age from 23 to 58 years (mean 39.4 years), was 9.7% per day, with a standard deviation of 1.2% per day. This value is very close to the 9.6% per day found by Kurland et al.[28] in their group of 10 women and 1 man, between the ages of 22 and 30. A group of eight young men in the series of Sterling and Chodos, with ages between 23 and 26 years, had a comparable rate and standard deviation of 10.5 ± 1.1.[20] These findings suggest a remarkably similar rate of thyroxine turnover in the normal human.

Although PBI values for all groups studied were, with few exceptions, within the normal range, significantly lower values were found in the chronically paralyzed, in chronically hospitalized mental defectives, and in patients with general paresis. Only 4 out of 31 schizophrenics had PBI values below the lowest normal value. It is thus apparent that normal values for PBI are found in the majority of schizophrenics, a finding in harmony with that of Bowman et al.,[7] Brody,[9] Brody et al.,[11] and Faurbye et al.[17] The incidence of high-normal PBI values in paranoids as described by Bowman et al.[7] was not noted in this study *(vide infra)*.

Low PBI values in the physically abnormal patient are not specific and are comparable to those seen in the chronically ill suffering from other disorders.[25,27] Although it seems reasonable to suppose that this decrease is secondary to stress-induced inhibition of the pituitary-thyroid axis,[28-30] the occurrence of depressed prealbumin levels in chronic illness [31] provides an alternate explanation.

The majority of schizophrenic patients (with the exception of a few paranoid and chronic deteriorated cases) had normal turnover rates, as well as normal PBI values. Although precise quantitative measures of the magnitude of thyroxine degradation were not made, it nevertheless appears unlikely that schizophrenics in general have an abnormal rate of thyroxine utilization. The numerous references to hypometabolism in schizophrenia *(vide supra)* are not readily explainable on this basis.

The few low values for turnover rate in long-standing hospitalized schizophrenics are not as striking as those seen in chronically institutionalized patients with general paresis, and this disturbance is therefore certainly not specific for schizophrenia. With reference to the question of abnormal oxygen consumption in schizophrenia, it should be pointed out that the difference becomes very small when patients are compared with normal subjects who live under similar conditions,[5] or when only brief hospitalization has been experienced.[7] In at least one study of hebephrenic patients no abnormalities of oxygen consumption were found.[17] Some emphasis has been placed on the relatively poor metabolic response to thyroxine in schizophrenics.[6,32,33] Thyroxine resistance is not found uniformly in schizophrenia,[17] and normal subjects also may have relatively poor responses to oral thyroxine.[34,35]

An interesting exception to the other schizophrenic categories is that of the paranoid group, whose turnover rate is significantly higher than normal. Although the mean PBI of paranoid patients in this study was not significantly higher than normal, the variability of PBI values was significantly larger than the normal

($P<0.025$). Suggestive evidence that paranoid patients manifest a difference in some aspects of thyroid function comes also from the work of Bowman et al.,[7] who have demonstrated that paranoid schizophrenics had high-normal PBI levels, as compared with other schizophrenic groups. Four of the patients in this group were disturbed sufficiently that the ward medical officer found it necessary to administer chlorpromazine in amounts up to 300 mg. per day. Rapid turnover was not due to the use of the drug, because it has been shown that chlorpromazine in amounts of 600 mg. per day does not affect the rate of thyroxine turnover.[36] For the bulk of schizophrenics tested, however, it is apparent that neither thyroxine turnover nor protein-bound iodine is abnormal.

The possibility exists that the kind or intensity of the emotional state (and not the diagnostic category) influences thyroxine turnover or plasma protein-bound iodine. In this experiment the paranoid patients were judged clinically to be the most intensely disturbed as a group, and their turnover time was generally shorter than normal. A correlation between protein-bound iodine and anxiety intensity was found by Board et al.[15] in recently hospitalized patients. It may also be relevant that prefrontal lobotomy was followed by a lowering of PBI in the majority of patients with initially high values in the study of Brody et al.,[10] although no very striking correlation between emotional "tension" and the PBI could be demonstrated in another series of cases.[9]

A situation which may be analogous has been described by Persky, who noted an abnormally rapid rate of disappearance of hydrocortisone from the plasma of psychiatric patients judged to be "most prone to become anxious" among his patient population.[37] An intensely and chronically anxious woman with severe obsessive-compulsive neurosis in the present study was found to have normal plasma protein-bound iodine and normal thyroxine turnover rate.

The rapid turnover observed in mental defectives (none of whom were Mongolian idiots) is comparable to the similarly elevated turnover rate in the group of Mongolian idiots observed by Kurland et al.[38] The mechanism underlying this disturbance is obscure, but it may be due to a deficiency of plasma thyroxine-binding proteins. Such deficiencies occur in certain chronic disorders and lead to abnormalities in thyroxine turnover rate.[31]

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Barnes Hospital, 600 S. Kingshighway (10).

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Clinical Status and Cerebrospinal Fluid "Total Neuraminic Acid"

Repeated Observations on Schizophrenic Patients

SAMUEL BOGOCH, M.D., Ph.D.; KARL T. DUSSIK, M.D., and PETER G. LEVER, M.D., Boston

The observation [1,2] that the "total neuraminic acid" in the cerebrospinal fluid (CSF) of schizophrenic patients as a group is lower than that found in nonschizophrenic subjects raised many questions regarding the possible significance of this finding. Perhaps one of the first of these is concerned with the constancy of the neuraminic acid concentration in a given patient over a period of time. If the concentration of neuraminic acid is indeed of significance in the schizophrenic process, several possibilities present themselves. The concentration may be a constant characteristic for a given individual—like a fingerprint, a biological landmark. On the other hand, the concentration may vary with different functional states of the nervous system. It is also possible that both phenomena may operate; thus, the concentration may vary slightly with certain functional states, but vary over a relatively narrow range, which is itself in some way characteristic of the individual.

To obtain information relevant to these possibilities, individual patients were followed in various circumstances of hospitalization, with and without various therapies, by careful clinical evaluation and repeated determination of the concentration of neuraminic acid in the CSF over a period of several weeks and months. The findings obtained to date confirm the observation that there is an abnormality in the concentration of "total neuraminic acid" in the cerebrospinal fluid of schizophrenic patients and draw attention to several interesting correlations which, in addition to suggesting certain chemical indices of nervous system function, may prove to be of value in following the clinical course of individual patients.

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From the Neurochemical Research Laboratory, Massachusetts Mental Health Center (Boston Psychopathic Hospital), and the Department of Psychiatry, Harvard Medical School.

Methods

The method used for the determination of "total neuraminic acid" in CSF, using as standard N-acetyl neuraminic acid isolated in this laboratory from bovine brain ganglioside, with all the necessary precautions required in this determination, has been detailed elsewhere.[3] Patients were chosen with the diagnostic category of schizophrenia, as well as with other diagnoses. The patient population of two psychiatric hospitals was employed. An attempt was made to obtain two equivalent groups, treated and untreated; but, as might be expected in the therapeutic atmosphere of the mental hospital today, it was difficult to obtain an "untreated" group of patients; and, indeed, the number of patients in this latter group is only 11. This communication reports all of the cases to date for which repeated determinations have been obtained.

A "double-blind" method was employed, whereby the investigators evaluating the clinical state of the patient had completed and recorded their observations before the laboratory findings were made known to them; and, similarly, the clinical information was not available to those performing the laboratory determinations. The clinical observations were recorded on a standard form, which included all of the pertinent clinical and psychological data, with special attention to such parameters as evidence of withdrawal, vagueness, fantasy activity, and dissociative phenomena, as well as the presence of hallucinations, delusions, extremes of

"Total Neuraminic Acid" Concentrations in the Cerebrospinal Fluid of Schizophrenic and Nonschizophrenic Patients *

Case No.	Diagnosis	Age, Yr.	Sex	Neuraminic Acid Determinations					Treatment †	Clinical Status
				1st Date : μg.	2d Date : μg.	3d Date : μg.	4th Date : μg.	5th Date : μg.		
118	Schiz. cat.	37	M	8/57:40.0	8/57:45.0	10/57:36.0	10/57:39.0	..	Insulin	Impr.; disch.
150	Schiz. cat.	40	F	7/57:34.0	8/57:37.0	10/57:38.0	10/57:42.2	..	Insulin	Impr.; disch.
151	Alc., not psy.	33	F	10/57:48.8	10/57:46.5	10/58:48.5	..	..	None	No chge.
159	Schiz. ch.	45	M	5/58:37.0	7/58:40.5	..	..	..	Marsilid	Impr.
168	Schiz. cat.	35	F	2/58:41.0	6/58:38.0	..	..	..	Insulin	Exc.; quieter
173	Schiz. cat.	33	F	11/57:40.5	12/57:37.5	1/58:42.0	..	..	Compazine	Impr.; disch.
175	Retarded	9 mo.	M	11/57:32.5	3/58:33.5	..	..	..	None	No chge.
178	Schiz. par.	30	F	12/57:35.3	1/58:38.0	3/58:40.0	..	..	Insulin	Impr.; disch.
179	Invol. par.	53	F	12/57:46.5	2/58:45.0	6/58:39.0	7/58:41.5	..	Marsilid	No chge.
180	Schiz. par.	39	F	12/57:43.2	1/58:43.5	..	..	..	Compazine	Exc.; impr.
184	Schiz. par.	30	F	12/57:36.0	1/58:37.5	2/58:40.0	3/58:40.0	..	Insulin	Impr.; disch.
193	Schiz. par.	29	F	12/57:41.0	1/58:37.0	2/58:39.0	..	..	Insulin	Impr.; disch.
196	Schiz. par.	28	F	12/57:39.5	1/58:51.0	4/58:37.5	..	..	Insulin	Impr.; relapse
197	Schiz. par.	25	F	12/57:43.5	1/58:34.0	3/58:39.0	4/58:43.5	6/58:32.0	Insulin	See text
205	Schiz. cat.	35	M	12/57:38.0	4/58:36.0	6/58:32.0	..	..	Trilafon	No chge.
207	Schiz. par.	30	F	12/57:40.0	1/58:55.0	7/58:36.0	..	..	Vesprin	Impr.; relapse
213	Schiz. par.	28	F	12/57:35.5	4/58:31.5	..	..	..	Insulin	Impr.; disch.
214	Schiz. par.	44	F	12/57:41.5	4/58:38.0	..	..	..	Insulin	Impr.; disch.
221	Schiz. ch.	37	F	1/58:41.0	7/58:38.5	..	..	..	None	No chge.
222	Invol. par.	44	F	1/58:46.6	5/58:42.0	..	..	..	Insulin	Exc.; quieter
226	Schiz. par. (?)	67	M	1/58:34.1	4/58:34.0	6/58:32.5	..	..	Trilafon	No chge.
228	Schiz. pseud.	29	F	1/58:37.5	3/58:34.0	4/58:35.0	5/58:34.5	..	Marsilid	Worse; stat.
229	Schiz. (?)	41	F	1/58:41.0	6/58:40.0	..	..	..	Marsilid	Impr.; disch.
245	Man-depr.	50	F	2/58:43.5	2/58:37.7	..	..	..	ECT	Confused
247	Schiz. undif.	33	F	2/58:42.0	2/58:38.0	6/58:36.0	..	..	Insulin	Exc.; quieter
259	Schiz. par.	23	M	2/58:37.0	7/58:36.0	..	..	..	Insulin	Impr.; disch.
262	Mental def.	45	M	3/58:43.5	3/58:43.5	6/58:39.0	..	..	Compazine	Def.; cat. st.
264	Schiz. cat.	17	M	3/58:37.0	5/58:32.5	6/58:38.0	7/58:38.0	..	Trilafon	No chge.
266	Cr. Br. syn. ?	66	M	3/58:35.0	3/58:40.0	5/58:38.0	6/58:38.5	..	None	No chge.
267	Schiz. undif.	50	M	3/58:33.5	6/58:34.7	7/58:42.5	..	..	None	Impr.
269	Art. br. syn.	71	M	3/58:46.9	4/58:42.0	..	..	..	None	Exc.; quieter
270	Schiz. par.	25	F	3/58:40.0	6/58:37.0	..	..	..	Insulin	Exc.; quieter
275	Par. st.	66	F	3/58:39.0	4/58:40.0	5/58:38.0	..	..	Compazine	No chge.
277	Man-depr.	55	M	3/58:45.0	5/58:44.0	7/58:44.8	..	..	ECT	No chge.
279	Chr. br. syn. (?)	53	M	3/58:40.0	3/58:37.5	6/58:40.5	..	..	None	No chge.
284	Ch. br. syn.	59	M	3/58:49.0	6/58:44.0	..	..	..	Vitamins	No chge.
294	Par. st.	40	M	3/58:45.0	5/58:46.0	..	..	..	None	No chge.
299	Schiz. cat.	50	M	4/58:37.5	4/58:39.0	..	..	..	None	No chge.
305	Schiz. chr.	43	M	4/58:40.0	6/58:35.0	..	..	..	Insulin	No chge.
307	Alc. br. syn.	61	M	3/58:43.2	4/58:48.0	6/58:40.5	..	..	Vitamins	Impr.
308	Alc. psy.	30	M	4/58:37.0	4/58:41.0	..	..	..	Vitamins	Impr.; disch.
313	Schiz. ch.	19	M	4/58:34.0	7/58:40.5	..	..	..	None	No chge.

317	Schiz. (?)	69	M	4/58:45.0	6/58:36.0	--	--	--	None		See text
323	Schiz. undif.	52	M	4/58:40.0	6/58:34.5	7/58:37.0	--	--	Insulin		Exc.; quieter
324	Schiz. ch.	61	M	4/58:35.0	5/58:37.0	5/58:40.0	7/58:34.5	--	Pacatal		No chge.
325	Schiz. cat.	25	M	4/58:42.0	5/58:45.2	6/58:40.0	--	--	ECT		See text
326	Schiz. par.	29	M	4/58:36.0	6/58:37.5	7/58:38.1	--	--	Insul. & ECT		No chge.
329	Alc. psy.	57	M	4/58:39.0	5/58:38.0	6/58:37.0	6/68:44.0	7/68:42.0	Vitamins		See text
330	Schiz. ch.	51	F	4/58:36.0	5/58:34.0	--	--	--	Psy. ther.		No chge.
336	Schiz. par.	32	M	4/58:41.0	6/58:36.5	7/58:40.0	--	--	Insulin		Impr.
338	Schiz. par.	17	M	4/58:41.0	6/58:40.8	7/58:40.0	--	--	Insulin		No chge.
339	Involl., psy. (?)	69	M	4/58:37.5	5/58:34.0	--	--	--	Marsilid		No chge.
340	Schiz. par.	41	M	4/58:39.0	5/58:35.0	--	--	--	ECT		Impr.
343	Schiz. par.	50	M	5/58:40.0	6/58:39.0	7/58:44.3	--	--	Insulin		Impr.
351	Schiz. par.	24	F	5/58:33.0	6/58:36.0	--	--	--	Insulin		Impr.
370	Schiz. ch.	46	F	6/58:38.0	6/58:40.0	6/58:40.0	--	--	None		No chge.
379	Alc. psy.	68	M	6/58:37.0	7/58:42.0	--	--	--	Vitamins		Impr.
392	Schiz. ch.	59	M	6/58:39.0	7/58:41.0	7/58:36.5	--	--	None		No chge.
397	Schiz. ch.	16	M	7/58:37.5	7/58:36.5	--	--	--	None		No chge.

* Alc. indicates alcoholic; art., arteriosclerotic; br. syn., brain syndrome; cat., catatonic; ch., chronic; chge., change; def., defective; depr., depressive or depression; disch., discharged; ECT, electroconvulsive therapy; exc., excited; impr., improved; involl., involutional; man., manic; par., paranoid; pseud., pseudoneurotic; psy. ther.; psychotherapy; psy., psychosis; schiz., schizophrenic; st., state; stat., stationary; undif., undifferentiated; (?) diagnosis in doubt. μg indicates micrograms/cc. CSF.

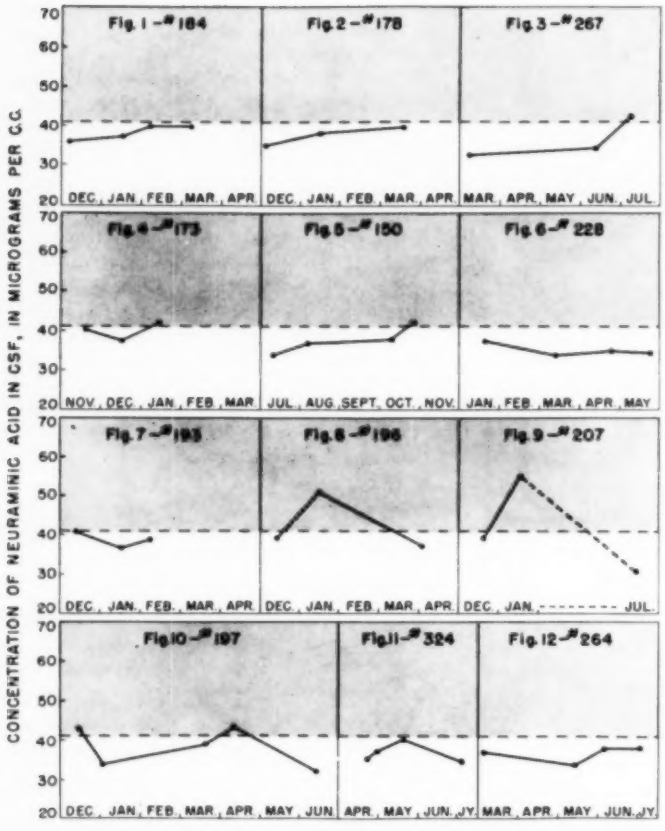
† Marsilid is iproniazid; Compazine, prochlorperazine; Trilafon, perphenazine; Pacatal, mepazine; Vesprin, triflu promazine.

affect, manifest anxiety, speech, and motor activity. In addition, a special attempt was made to gauge clinically the "level of maturity" of the patient, using both the usual clinical estimates and the indications of particular levels of development attained in terms of psychoanalytic theory. This latter parameter will be discussed in a future communication.

A total of 41 schizophrenic and 18 nonschizophrenic patients were examined by the methods outlined above. A total of 163 lumbar punctures at intervals of days through months were performed on these 59 patients, providing between two and five determinations of "total neuraminic acid" per patient. A thorough clinical evaluation accompanied each determination. Of the patients studied, 21 received coma insulin therapy, 13 received drug therapy, 3 received electroshock therapy, and the remainder received no specific therapy.

Results

The results are summarized in the accompanying Table. It may be noted that, despite active treatment in 33 schizophrenic patients, 80 out of the 94 neuraminic acid determinations showed a concentration of neuraminic acid at or below 41.0μg/cc. of CSF. Thus, 14.9% of the determinations in *treated* schizophrenic patients showed values above 41.0μg/cc. This demonstrates that, on the one hand, the low values previously reported for schizophrenic patients are reasonably "group consistent," even despite active treatment. On the other hand, only 1 out of 18 determinations on 8 *untreated* schizophrenic patients (5.5%) was above 41.0μg/cc. (7.9% in the previous larger series[2]), so that the percentage of schizophrenic patients showing higher neuraminic acid values may be greater with active therapy. It may also be noted that some variation (methodological or biological or both) occurs in the concentration of neuraminic acid in the CSF of many of these patients, but that it is not large, representing only a change of 1μg/cc. to 4μg/cc. in most. Thus, there is variation about the mean for the schizophrenic group, but values seldom reach into the range of nonschizophrenic values (42.0μg/cc. to 70.0μg/cc.). Similarly, variation occurs in values of nonalcoholic mental hospital patients who are not schizophrenic, and about


CONCENTRATION OF NEURAMINIC ACID IN CSF, IN MICROGRAMS PER C.C.
Fig. 1 – # 184
DEC., JAN., FEB., MAR., APR.
Fig. 2 – # 178
DEC., JAN., FEB., MAR., APR.
Fig. 3 – # 267
MAR., APR., MAY., JUN., JUL.
Fig. 4 – # 173
NOV., DEC., JAN., FEB., MAR.
Fig. 5 – # 150
JUL., AUG., SEPT., OCT., NOV.
Fig. 6 – # 228
JAN., FEB., MAR., APR., MAY
Fig. 7 – # 193
DEC., JAN., FEB., MAR., APR.
Fig. 8 – # 196
DEC., JAN., FEB., MAR., APR.
Fig. 9 – # 207
DEC., JAN., ---------- JUL.
Fig. 10 – # 197
DEC., JAN., FEB., MAR., APR., MAY., JUN.
Fig. 11 – # 324
APR., MAY., JUN., JY.
Fig. 12 – # 264
MAR., APR., MAY., JUN., JY.
70
60
50
40
30
20

Figs. 1-12.—Concentration of neuraminic acid in cerebrospinal fluid on repeated determinations over several months.

whose diagnosis there is no doubt; but these variations seldom lead to values which fall into the range of the schizophrenic group (Table, Cases 151, 179, 222, 262, 269, 277, 284, and 294).

The question of whether the variations which occur are in any way significantly related to changes in the clinical status of the patients is examined in the following individual studies, which are very briefly summarized.

Figures 1 through 12 show the concentration of total neuraminic acid in the CSF plotted against time, with determinations made approximately once a month for four months. The shaded area represents the range of normal adult values.

Case 184 (Fig. 1).—A 30-year-old schizophrenic patient had demonstrated increasing seclusiveness and withdrawal since 1946, and since 1957 had suffered delusions of persecution and auditory hallucinations. She had had two previous mental hospital admissions. On her present admission she was given a course of insulin coma therapy, from Nov. 27, 1957, to March 6, 1958, with 66 treatments, 49 comas, and a maximum dose of 360 units of insulin. She was clinically improved, with disappearance of hallucinations and delusions, the attainment of a "social remission" permitting her to leave the hospital. It may be seen that the concentration of neuraminic acid increased gradually over the period of therapy, reaching a final concentration of 40.0μg/cc., but not higher.

Case 178 (Fig. 2).—A 30-year-old paranoid schizophrenic woman was admitted for the first time on Nov. 14, 1957, because of increasing withdrawal, with lack of activity and spontaneity over the past two years. She feared that someone would enter her room and that she was being persecuted by outside forces. She received a course of insulin therapy between Dec. 2, 1957, and March

20, 1958, with 65 treatments, 51 comas, and a maximum dose of 180 units. She was discharged as improved, with diminished paranoid ideation, and was able to live at home and work, although this remission was not a full one. The neuraminic acid levels increased over the four-month period up to 40.0μg/cc.

CASE 267 (Fig. 3).—A 50-year-old schizophrenic patient had been ill for at least 20 years. He was quiet and withdrawn, with lack of spontaneity and with paranoid delusions. He was observed between March and July, 1958. He received no drug or insulin therapy and no formal psychotherapy. During the last two months he appeared more spontaneous, began to speak to many people, played chess with various ward personnel, joined the baseball team, and in general seemed considerably improved. The neuraminic acid concentration rose from 33.5μg/cc., in March, to 34.7μg/cc., in June, to 42.5μg/cc., in July.

CASE 173 (Fig. 4).—A 33-year-old schizophrenic patient had shown symptoms since the age of 20 associated with loss of interest in life, withdrawal, and what appeared to her family as depression. She had had a previous mental hospital admission following a suicidal attempt. On this occasion she was admitted in a state of catatonic stupor, speaking only an occasional word. She was treated with prochlorperazine (Compazine), beginning Oct. 23, 1957, and continuing to the time of discharge. She was discharged in June, 1958, as in a full remission; she was superficially happy and able to take care of her children and the home, but lacking in insight. Her neuraminic acid concentration showed an initial depression, followed by an elevation to 42.0μg/cc.

CASE 150 (Fig. 5).—A 40-year-old woman had been in a mental hospital for 10 years, withdrawn, uncoordinated and incoherent in her thinking, with the delusion that here mother was still alive. She received insulin therapy from Aug. 7, 1957, to Nov. 12, 1957, with 64 treatments, 55 comas, and a maximum dose of 110 units. She was discharged as considerably less withdrawn, and more coherent, but maintaining her delusions, although with considerably less intensity. The neuraminic acid concentration rose from 34.0μg/cc. to 42.2μg/cc.

CASE 228 (Fig. 6).—A 29-year-old pseudoneurotic schizophrenic woman, whose two maternal aunts, mother, and a cousin suffer the same disorder, was hospitalized for the fourth time in January, 1958, for symptoms of vagueness and "depression." She was treated with iproniazid (Marsilid), 150 mg. daily, beginning February, 1958. She showed no improvement but, rather, demonstrated worsening of her symptoms, clearer-cut schizophrenic ideation coming to the fore. During this period her neuraminic acid concentration fell from 37.5μg/cc. to 34.0μg/cc., with repeat determinations during the stationary phase of her illness, in April and May, showing values of 35.0μg/cc. and 34.5μg/cc., respectively.

CASE 193 (Fig. 7).—A 29-year-old schizophrenic woman had shown symptoms, including paranoid ideas and fears that she suffered from various venereal and other infectious diseases, as well as a brain tumor, and was admitted in December, 1957. She received a course of insulin coma therapy, beginning Dec. 17, with 38 treatments, 36 comas, and a maximum dose of 120 units. She had a full remission, with complete disappearance of symptoms, and is working at home taking care of four children, although she has not returned to her previous work as a nurse. The preinsulin neuraminic acid concentration was 41.0μg/cc., followed by values of 37.0μg/cc. and 39.0μg/cc.

CASE 196 (Fig. 8).—A 28-year-old schizophrenic woman was admitted in 1956, anxious, confused, incoherent, and giggling, with marked paranoid ideation. After a period of psychotherapy, she was given a course of insulin coma therapy, between December, 1957, and May, 1958, with 107 treatments, 83 comas, and a maximum dose of 220 units. She improved markedly in December and January, with almost complete loss of symptoms. However toward the end of January and throughout the next three months she demonstrated a marked deterioration, with return of anxiety, confusion, and delusions. The neuraminic acid concentration increased markedly, coincident with the clinical improvement, reaching a value of 51.0μg/cc., then showed a decline, coincident with the clinical relapse, to a value of 37.5μg/cc.

CASE 207 (Fig. 9).—A 30-year-old schizophrenic woman was hallucinated and suffered paranoid delusions on admission to hospital in December, 1957. She received 75 mg. of triflupromazine (Vesprin) per day from admission through July, 1958. She improved markedly during the first month of hospitalization, with disappearance of hallucinations and almost complete absence of paranoid ideation. However, in February and March, 1958, she began to show some return of symptoms, being again somewhat more anxious and more paranoid in her thinking. The neuraminic acid concentration rose markedly in the first month of her hospitalization, from 40.0μg/cc. to 55.0μg/cc., temporally coincident with her improvement; but in July showed a new low of 36.0μg/cc., temporally coincident with her relapse.

CASE 197 (Fig. 10).—A 25-year-old schizophrenic woman had had a previous hospital admission in 1955 for paranoid illness following the birth of her first child. She recovered from this, but was admitted in December, 1957, after several months of neglecting herself and being preoccupied with overreligious ideas, sexual delusions, and visual and auditory hallucinations. On admission she was paranoid, aggressive, assaultive, and very excited. She

improved quickly in the first few weeks of hospitalization in terms of her excitement and aggressivity, but remained grossly delusional. She received a course of chlorpromazine (Thorazine) and perphenazine (Trilafon) therapy from January through March, 1958, with some slight improvement. In April, 1958, she was placed on insulin therapy and improved further, so that she was able to go home on weekends. Toward the end of April she became pregnant and insulin therapy was withdrawn. She remained moderately improved through June, 1958, but was still rather deluded. The neuraminic acid concentration was 42.5μg/cc. on admission (coincident with her excited behavior), dropped to 34.0μg/cc. when she was outwardly calm but grossly psychotic, rose to 43.5μg/cc. as she improved with chlorpromazine and insulin therapy, and then showed a new low value of 32.0μg/cc., temporally coincident with her second month of pregnancy.

CASE 324 (Fig. 11).—A 61-year-old schizophrenic patient had had two previous admissions to a mental hospital and was admitted on this occasion, on April 19, 1958, because of withdrawal, vagueness, inability to work, and auditory hallucinations. During the first month of hospital stay he received no definitive therapy, but improved somewhat, spending more time with other patients and ward personnel. At the end of May he was placed on mepazine (Pacatal) acetate, 150 mg. per day. The neuraminic acid concentration increased during the first month to a level of 40.0μg/cc., coincident with his clinical improvement. His last value dropped to 34.5μg/cc., coincident with the administration of mepazine, but with no observed change in his clinical status.

CASE 264 (Fig. 12).—An 18-year-old schizophrenic youth had been ill for at least five years and had had two previous mental hospital admissions. His recent admission, on Jan. 28, 1958, was because of illness characterized by inappropriate smiling, flattened affect, and threatening behavior. He was placed on perphenazine therapy from February through July, 1958, showing no significant clinical change. His neuraminic acid values showed no major fluctuation.

CASE 343 and CASE 118 (Table, not charted) are two other examples of improvement in clinical condition of the patient which was accompanied by an increase in the total concentration of neuraminic acid in the CSF. Patient 118 also showed a decrease in concentration of neuraminic acid accompanying a deterioration in his clinical condition (third determination), but improved and was discharged.

The cases summarized above illustrate (1) that repeated neuraminic acid values tend to fall within the range of 30μg/cc. to 41μg/cc. in schizophrenic patients, and (2) that the direction of change in the concentration of "total neuraminic acid" in some of the cases so far examined (see also Table) is temporally coincidental with, and qualitatively related to, the change in the clinical status. In a few cases, such as Cases 196 and 207, the parallel holds in quantitative terms as well; that is, in these cases a marked clinical improvement was accompanied by a marked increase in the concentration of "total neuraminic acid" in the CSF, and, similarly, a marked deterioration in clinical condition was accompanied by a marked drop in the concentration of neuraminic acid. In 3 of the 42 schizophrenic patients so far studied by repeated determinations (Cases 213, 214, and 340) the direction of change in concentration of neuraminic acid was opposite to the direction of the change in clinical status. Cases 151, 175, 221, 266, 279, 294, 299, 313, 370, 392, and 397 all illustrate patients who received no definitive therapy and showed no essential change in their clinical status. Examination of these values provides an idea of the variation to be expected in the concentration of neuraminic acid in the absence of definitive therapy. Case 267 is an interesting example of a patient who received no definitive therapy but demonstrated marked spontaneous clinical improvement, accompanied by an increase in neuraminic acid level.

Four cases diagnosed as "paranoid state" are of interest: In two (Cases 222 and 294) the patients were relatively mature, outgoing people, with a great deal of the symptomatology directed outward. In these patients the neuraminic acid values were relatively high. On the other hand, in the other two cases of paranoid state (Cases 226 and 275) in which the symptomatology was much more reminiscent of a withdrawn, dissociative schizophrenic disorder (paranoid schizophrenia was considered as an alternate diagnosis), the neuraminic acid values were relatively low. The difference of opinion which is frequently met in terms of clinically evaluating late-life paranoid

states with reference to schizophrenic illness is of interest in this regard, since the concentration of neuraminic acid may prove of help in differentiating two rather different classes of disorder of this type.

As illustrating one difficulty encountered in attempting to correlate the clinical syndrome with the laboratory findings in some of these patients, Case 279 is of interest. At the time when the neuraminic acid determinations were made, this patient was clearly suffering from a chronic brain syndrome which was the result of an attempted suicide with carbon monoxide. This was his fourth suicidal attempt. Little other history is available on this patient. It is impossible to have any clear idea of whether the low neuraminic acid values which he demonstrates are related to the psychiatric illness which resulted in four suicidal attempts, or whether they are related to the brain damage subsequent to carbon monoxide poisoning.

Two schizophrenic patients demonstrated high values of total neuraminic acid temporally associated with convulsive activity of the nervous system. In Case 325 the first sample was taken immediately after the shock treatment was administered; the second sample was taken one day after shock treatment was administered, and the third sample, four days after the last treatment. In Case 317 the patient was suffering a spontaneous grand mal seizure when the first sample was taken, but there was no convulsive activity when the second sample was taken.

An interesting source of low values of neuraminic acid concentration has been revealed in the study of several cases of psychosis associated with alcoholism. Cases 308, 328, and 379 each illustrate low values of "total neuraminic acid" associated with delirium tremens and acute alcoholic psychosis, values which increased to a higher range as the patients recovered from their psychotic episodes. Case 151 represents a patient with alcoholism without psychosis, in which the values are in the nonschizophrenic range. The interesting question of whether these cases illustrate the effect of nutrition or of the psychotic state upon the concentration of neuraminic acid in the CSF is taken up in the section on "Comment."

One case diagnosed as involutional psychotic depression (Case 339) had a low value on admission, which was even lower when the patient was given iproniazid.

In addition, two cases of chronic brain syndrome of unknown origin (Cases 266 and 279) presented low values of total neuraminic acid concentration.

A search for clinical characteristics most frequently referred to in the clinical descriptions of patients with low neuraminic acid values revealed no consistent correlation with any of the classical secondary symptoms of schizophrenia, as described by Bleuler. There was, however, a frequent association of low neuraminic acid values with the clinical estimate of psychological immaturity, a finding of special interest with reference to the earlier demonstration [1,2] of low values in many children under 7 years of age.

Comment

The fact that most schizophrenic patients show a rather constant value for the concentration of "total neuraminic acid" in CSF on repeated determinations over weeks or months is in agreement with the earlier observation in this laboratory [1,2] that the mean concentration of neuraminic acid in the CFS of schizophrenic patients as a group is lower than that observed in nonschizophrenic adults and is comparable only to values seen in some children under 7 years of age. The assignment of significance to a single determination of "total neuraminic acid" in a given patient is subject to the same considerations as in any other laboratory determination in clinical medicine. On the other hand, the finding of "group-consistent" values for a given individual over two to five repeated determinations makes the possibility that a low value is due to chance error diminish to an insignificant level. The total number of patients examined with reference to "total neuraminic acid" in CSF [2] is now greater than 700. In the ex-

panded series of cases studied it has been found that the level of 41μg. of neuraminic acid per cubic centimeter of CSF is the most useful arbitrary level at which to separate the values of schizophrenic subjects from those of nonschizophrenic subjects, with approximately a 10% overlap of the two groups. The diagnostic value of the determination, however, must remain an open question until many more cases at various stages in the clinical course of various neuropsychiatric illnesses have been examined. Thus, some cases of alcoholism (above), chronic brain syndrome, syphilis, and cerebral tumor have been found in this laboratory to demonstrate low values for "total neuraminic acid."[6]

The difference in neuraminic acid concentration between the schizophrenic and the nonschizophrenic group is apparently unrelated to the diet consumed by the patients. Of the 21 cases in which insulin therapy was given over a period of several months, the diet consumed and the weight gain which resulted in all cases were in only 5 cases associated with an increase in neuraminic acid concentration, bringing it to over 41.0μg/cc., and in only 1 of these cases (Case 196) was the increase sufficiently significant to bring the concentration of neuraminic acid markedly into the nonschizophrenic range. In view of this nutritional control group, it does not seem likely that the change in the concentration of neuraminic acid demonstrated by the alcoholic patients recovering from a psychotic episode is simply a nutritional phenomenon related to dietary intake; rather, it is more likely that it is in some way associated with the change from the psychotic to the nonpsychotic state.

It may be noted that in some cases (Cases 197, 214, and 247) there was an initial neuraminic acid value on admission which was slightly above the schizophrenic range. These high values accompanied a clinical state of marked overexcitement. The subsequent values in these patients, determined when they had lost the overexcited symptoms but still retained the basic psychotic delusional disturbance, were always in the lower schizophrenic range. These high values, apparently due to an increase in the dialyzable Bial-positive substances of the CSF,[6] may be related to the excitement and overactivity of the central nervous system. The high values (Cases 317 and 325) associated with convulsive activity of the nervous system are of interest in this regard.

Recent studies in this laboratory[3-6] which have provided methods for the separation of micro- and macromolecular species in CSF with reference to neuraminic acid have demonstrated a particular water-soluble glycoprotein fraction (Fraction G) which contains neuraminic acid. Variation in this fraction is primarily responsible for variation in the level of "total neuraminic acid."[3-6] These quantitative studies are designed to define the distribution of neuraminic acid between dialyzable and nondialyzable fractions of CSF. From the results obtained,[3-6] it is likely that dialyzable molecular species related to neuraminic acid contribute to the development of color in the Bial reaction, and thus contribute to the value for "total neuraminic acid." That the content of glucose in the CSF does not operate quantitatively in this respect is shown by three findings: 1. Complete absence of correlation between the values for the content of "total neuraminic acid" and those for glucose which are determined simultaneously on all CSF specimens; that is, high values of CSF glucose are frequently associated with low values of neuraminic acid, and vice versa.[6] 2. Failure of added glucose to raise appreciably the value for "total neuraminic acid" in CSF so long as the total presence of glucose does not exceed the normal concentration range of 40 to 70 mg. %.[6] 3. Oxidation of CSF with glucose oxidase reduces the total value for the Bial reaction, but does not do so in a predictable manner, nor in a strict relationship to the original content of the glucose in the CSF.

The demonstration of a relative constancy in "total neuraminic acid" in most schizophrenic and nonschizophrenic patients, respectively, suggests that this determination may be a distinctive index related in some way to the basic clinical characterization of the patient. It has been suggested elsewhere,[1,2,7] on the basis of the difference in concentration of CSF neuraminic acid in children and adults, that this characteristic may be related to the level of maturation of the central nervous system. Whether these findings in CSF will prove to be related to the state of neuraminic acid in the brain itself and to its function in the central nervous system in terms of membrane barrier and transport functions suggested by other studies in this laboratory [1,2,7-10] is yet to be determined. That such relevance with reference to brain neuraminic acid does in fact exist is suggested by recent studies by Cumings et al.[11] which show that the content of neuraminic acid in the brains of children of various ages follows a maturation curve similar to that previously described [1] for neuraminic acid in cerebrospinal fluid.

Summary

A total of 163 cerebrospinal fluid neuraminic acid determinations have been performed on 59 patients (2 to 5 determinations per patient at intervals of several days through months), a thorough clinical evaluation accompanying each determination. The results are discussed in terms of (1) the further evidence obtained with regard to the chemical abnormality in cerebrospinal fluid neuraminic acid in schizophrenic patients, (2) the relevance of this determination to certain functional states of the nervous system, and (3) the possibility of utilizing the determination of neuraminic acid as an objective aid in following the clinical course of schizophrenic patients.

The cooperation of the staff members of the Metropolitan State Hospital, Waltham, Mass., and the Massachusetts Mental Health Center (Boston Psychopathic Hospital) in making available their patients for this study is gratefully acknowledged. Mr. Peter C. Belval, Mr. Daniel Caplan, Miss Barbara Pois, and Mrs. Claire Grunberg gave excellent technical assistance. This study has been supported by grants from the U. S. Public Health Service (B-1221 and M-1419), and from the Scottish Rite Committee for Research in Schizophrenia through the National Mental Health Association.

Neurochemical Research Laboratory, 72-76 Fenwood Rd. (15).

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Books

BOOK REVIEWS

The Szondi Test. By L. Szondi, U. Moser, and M. W. Webb. Price, $12. Pp. 309. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5, 1959.

This book, while filling a gap in American literature on this infrequently used technique, is difficult to assess. The authors seem to believe what they are saying, yet offer little evidence, empirical or otherwise, to support their claims. Some of their statements seem to evolve from the mystics of occult more than from sound scientific inferences. Before turning to some specifics, a word about the Szondi Test.

The Szondi Test is a projective technique based on a person's reaction to a series of 48 photographs of psychotic patients. The photographs were chosen in accordance with the principle of genic relationship; that is, the person assumedly selects a photograph which portrays a psychiatric disorder also inherent in the subject's own familial geneology. "For example, a manifest or latent epileptic will be attracted either positively or negatively, depending on his particular epileptoid phase at the moment, to photographs of epileptics represented on the Szondi Test." There is a distinct Jungian orientation inherent in this principle.

While trying to be open-minded in seriously considering this rationale, this reviewer found little evidence to substantiate its validity. The authors work hard in attempting to quantify their diagnostic device, but are oftener than not carried away by their intensely positive identification with the Szondi Test, and objective conclusions are lacking, in spite of the authors' claims.

Aside from the lack of clinical soundness, the book is comprehensive in its presentation of the Szondi Test—its diagnostic and clinical application—as well as the theoretical background of *Schicksal Analysis* (fate analysis, or analysis of destiny). Chapters on group application and forensic psychology are included. The book answers most questions for anyone wanting to know something about the test, but this reviewer questions how much of this material is logical, in terms of current research in the behavioral sciences.

In fact, there are several psychological studies in the ten years since the test was introduced in America which discount the assumed relationship between the subject's response and the diagnostic classification of the persons pictured in the photographs. None of these studies is mentioned.

Another major disappointment is that the book's senior author, Lipot Szondi, contributes only 51 pages of the 309 comprising the book.

Although comprehensive in presenting the structure and content of the Szondi Test, the book is difficult to read, mainly because of its unique terminology, which demands careful study, and also because of its numerous charts and graphs, which this reviewer found to be tedious reading.

The book has many interesting statements which must be tested more rigorously, but the high price of the book will likely discourage wide readership.

If the authors' hope was to place their technique higher on the frequency scale of use among American diagnosticians, their mission is not considered successful. Possibly there is a cultural factor in the nature of the photographs which Americans do not identify with; but, whatever the case, research, oriented to testing concurrent validity, construct validity, and content validity, is much needed.

ROBERT I. YUFIT, Ph.D.

Time Distortion in Hypnosis. By Linn F. Cooper, M.D., and Milton H. Erickson, M.D. Second Edition. Price, $4. Pp. 206. Williams and Wilkins Company, 428 E. Preston St., Baltimore 2, 1959.

In its first edition the presentation of the phenomenon of time distortion was considered the first new discovery in hypnosis in well over one hundred years. This edition deals more completely with the experimental and clinical aspects of the phenomenon, specialized techniques for its induction, diverse associated psychological phenomena, and reports of its use in therapy.

The methodology presented reflects ten years of refinement, and the conclusions are derived from eight hundred hours of experimental work with subjects. The subject undergoing time distortion in the hypnotic trance is one who can be trained progressively to respond to deliberate alterations of his subjective awareness of the passage of time differing from "world time" or "clock time." Most of the studies in the book concern the phenomenon of subjective time increase; i. e., the subject experiences a much larger span of time than is indicated by a watch dial. The condensation of a sequence of acts, events, thoughts, and emotions in this interval of world time is not experienced by the subject as a quickening of pace, but seems to proceed at a normal rate within the extended subjective time interval, and the truthfulness of these "posthypnotic" reports in retrospect has been validated by polygraphic checks.

The most definitive results were gained in experiments with counting during periods which corresponded to large factors of time distortion. The rate of counting per individual subject over large ranges of distortion showed minimal variation per unit of subjective time, a finding which is presented as strong proof that the experience of increased duration was real to the subject, and that the rate was not adapted to the limits of the clock. The counting was associated with a rich array of experiences, affects, and sensations, all of which were commensurately condensed into the given interval of "world time." Sound signals during the interval of the trance were proportionately prolonged, however misidentified, without change in pitch.

Though considerably elaborated in the semantic interpretation of the results, the phenomena observed are regarded as a true speeding up of mental processes, as well as an alteration and reorganization of experiences in "world time." It is thought that a physiological speed-up takes place, but that the rate of time distortion relative to "clock time" is usually so high that no gross physiological changes are detectable. Hope is held, however, for its detection in electromyographic and electroencephalographic studies.

Further success is described in recovering material otherwise lost beyond immediate conscious recollection through the method of time distortion, in facilitating creative mental activity, in aiding some learning processes, and in intensifying every parameter of response in free association to word stimuli.

Motor patterns learned in the past can be reinstituted with facility by this method, such as the practice playing of neglected musical compositions, without involving overt motor participation. Here the belief is that the learning occurs at an accelerated rate, and, though it appeared dissociated from motor discharge, electromyographic evidence for involvement of the musculature is sought. Controlled experiments with motor learning of new tasks show no such facilitation. In attempts to study mathematical thought in tasks which were not familiar to the subject, no facilitation could be achieved. However, in experiments with non-motor learning, it was shown that study in the trance state with time distortion proceeded more rapidly and effectively than waking study.

Various subjects speak of the need to conceive the experience during the process of time distortion, as a "pattern," as a "continuity," as a "whole," to "see the beginning and end of everything . . . like a dream, it's a round thing, it's not a progression." One subject describes the experience of playing an instrument almost as a dissociative process . . . "even if they [hands] played the wrong notes I did not have the 'jar' of hearing the wrong notes. I could only tell they were wrong by the feel. . . . It's like two separate processes in the trance . . . the hearing and the feeling . . . so that the music that results is more like I was the instrument, and the whole thing is just a matter of coordination of my own faculties." Though some of these patients were incompletely trained, the authors recommend these descriptions as roads to understanding the process. Occasionally a subject will make reference to a delay or pause in hallucinated activity. Interestingly enough, the example given is this: "At the roller coaster, there was a long line of people, and we had to wait." The awareness of time seems here to be linked with the spatial sequence, or simultaneity, of people waiting in a line.

The conclusion is that "somewhere in the unconscious, patterns are elaborated as wholes from elements or units assembled from past experiences," and that these patterns are "lived through" with extreme rapidity during time distortion. These thought processes are considered to be of a "superior" type, as "there is seen an increased ability to see the situation as a whole." This is further emphasized in the chapter on semantic interpretation of the results, where the process is seen during the trance as a serial reconstruction "drawn from units of past experience in experiential space."

The relationship of these findings to theories of perception is left to the reader's interest and pursuit. The fascinating therapeutic results with the use of this technique, described in the last part of the book, leave one speculating as to the relationship between the dynamics

of the patient's illness and the process of time distortion. For instance, why does a rapid sequence of images of recollection in time distortion break through a repressive barrier in hysterical amnesia, otherwise refractory to regressive and dissociative techniques of hypnosis?

The phenomenon discussed is one of great importance at all levels of the study of behavior and learning, as it is focal to an understanding of the nature of serial order in psychological responses. The clinical examples presented point to exciting rewards for further research into its use as a therapeutic tool.

DAVID ROTH, M.D.

Personality Patterns of Psychiatrists: A Study of Methods for Selecting Residents. Volume I. By Robert R. Holt, Ph.D., and Lester Luborsky, Ph.D., with the collaboration of William R. Morrow, Ph.D., David Rapaport, Ph.D., and Sibylle K. Escalona, Ph.D. Price, not stated. Pp. 386 +XIV. Basic Books, Inc., 59 Fourth Ave., New York, 1958.

Personality Patterns of Psychiatrists: Supplementary and Supporting Data. Volume II. By same authors and with same collaborators as for Volume I. Price, not stated. Pp. 400 +XIV. The Menninger Foundation, Topeka, Kan., 1958.

These stimulating volumes present the report of a research project on the selection of residents done at the Menninger School of Psychiatry, together with a thorough discussion of the issues involved in the research and in the general problem of selecting psychiatric residents. The project represents a major undertaking covering a ten-year period, involving the authors as well as several collaborators and assistants. To simplify presentation, the report is divided into two volumes. The first, containing a general account of the study with important supporting material and designed so that it can be read by itself, will prove sufficient for the general reader. The second volume, arranged as a series of appendices to the first, offers further details, with extensive statistical tabulations and discussion of various less central issues.

The opening section sketches the background of the study. It points up the difficulties and the crucial importance of selection, by placing it in historical perspective with respect to the development of American psychiatry and psychiatric education. The subjects, the selection process, and the training setting are described. Here the authors touch on a large amount of fascinating data which could provide the springboard for many an additional research, e. g., sociological characteristics of psychiatric residents, applicants' image of their future roles and the value systems implicit therein, relationships between performance and personal psychotherapy (including psychoanalysis) during training, and other problems.

Preceding the description of the research proper is a discussion of theoretical issues. The authors indicate the anchoring of their study in two research traditions: actuarial prediction, utilizing objective test measures of isolated traits and statistical computation, and the clinical approach, stressing subjective evaluation based on knowledge of the personality as a whole in appropriate context. They review the development of each approach, critically examining its characteristics and advantages. Finally, they point out the speciousness of viewing the two as antithetical, and they offer a synthesis which they characterize as the "sophisticated clinical approach." This, then, was the basis for their study; but its implications for research in general are equally important. Lucid and impressive throughout, this discussion is the high point of the book and stands as a valuable contribution to methodological literature.

The initial phases of the project involved the collection of information to serve as the basis for decisions about methods and techniques to be used in a final predictive study. A number of preliminary and pilot researches and surveys of expert opinions were done. This approach involved a full awareness of the necessity to delineate clearly job requirements, personality traits necessary to accomplish these, and techniques useful in reliably measuring these attitudes, as well as to develop operational criteria to serve as a yardstick by which to measure prediction success. Again, sound methodological thinking and thorough preparation are apparent in this discussion.

The design used in the final study was exceedingly complex. Data available on all applicants included a battery of psychological tests and a standardized interview, in addition to usual application information. Every piece of data (e. g., the Rorschach findings) was separately scrutinized by each judge in a number of ways. To begin with, each was scored as to the presence of a large number of specific "cues," defined in elaborate manuals developed

for each test during the earlier phases of the project. On the basis of these cues ratings were made on each of thirty-two specific personality traits, previously noted to characterize better residents. Secondly, a rating was made on each of fourteen attributes considered necessary for psychiatry (e. g., empathy). Finally, general predictive ratings were made of over-all competence, as well as that in each of the specific areas of psychotherapy, diagnosis, management, and administration. When this was done, the process was repeated with the next source of data, and so on until all had been reviewed. Characterizations and predictions were then compared with independently made criterion measures. These latter included not only the completion of residency and indications of success beyond (e. g., Board certification), but also numerical ratings of ability made during residency, by both peers and supervisors, using specially designed scoring techniques. Each judge analyzed the data in a different order, to provide information about the value of varying the amount and type of information. Altogether, the project was so elaborate and detailed that anything more than this sketchiest of descriptions is manifestly impossible. Indeed, were it not for a chapter in which the whole procedure was illustrated step by step with a representative subject, even the second reading of the experimental design, which was found necessary, would not have sufficed.

Perhaps this very complexity is largely responsible for the limited positive findings, which are especially disappointing in view of the tremendous expenditure of effort and time. The authors' comments indicate their own awareness of this, and they dropped a number of planned substudies along the way. To some degree, however, they minimize the lack of solid results and proceed with their discussions of the characteristics necessary for success in psychiatry as though they had sound experimental data, rather than merely accumulated experience. This is particularly evident in the last section, in which the personalities of better and poorer residents are discussed, implications are drawn from the research, and recommendations are offered to others involved in selection. Though these chapters make very worth-while reading and impart judgments based on much firsthand experience, and though their comments seem wise and useful, this exposition is not based on experimental evidence.

This is by no means to state that there were no positive findings. Much fascinating information was uncovered. But by and large the complex array of cues, items, and tests failed adequately to meet the standards of successful prediction. Many variables did correlate significantly with predicted criteria, and these relationships are of very great interest; but even the best of these correlations tended to be so low that they had no value in efficiently separating satisfactory from unsatisfactory groups. Even the subsidiary aim—the development of useful objective techniques (the manuals delineating "cues") for examining clinical data—met with only partial success. Moderate reliability was achieved. While this does represent significant advance, it involved great effort. Moreover, generally the greater was the reliability of a test score the lower was its predictive validity. Alas, in the final analysis, neither the actuarians nor the clinicians will be satisfied: Both will find much to criticize and to justify maintaining their partisan views.

Perhaps whatever disappointment results from reading these volumes comes from too high an expectation. But this is related to the high levels the authors set for themselves. And it also seems due to the somewhat prematurely ambitious nature of the project in so new an area of investigation. This is by no means the definitive study, but it is a challenging, pioneering research.

This book will provide valuable and stimulating reading for anyone interested in training in psychiatry or psychology and is a "must" for those concerned with selection.

DONALD OKEN, M.D.

Child and Juvenile Delinquency. By Ben Karpman, M.D. Price, 10. Pp. 364. Psychodynamics Monograph Series, Station I., Washington, D. C., 1959.

The tautology in the title of this book, which consists of five symposia published over a period of years in the *American Journal of Orthopsychiatry*, seems to portend somehow the repetitious nature of much of its content.

Although one must, of necessity, expect to hear similar material over and over in word-for-word recordings of yearly round tables on the same subject, one might hope that an editor would offer a more digestible concentrate. I should add that this book is a relatively big one; and, although Dr. Karpman, who chaired the original symposia, tries to summarize each in a most orderly, highly compulsive, and objectively neutral fashion, it appears to me

that he often only adds to the confusion, redundancy, and doubts, coming up eventually with very little that is conclusive.

The contributors and discussants include some of the most highly regarded authorities in the field of child psychiatry and represent a variety of schools of thought, ranging from the rigidly organic through the orthodox psychoanalytic; yet it is disappointing to read a representative book on juvenile delinquency that contains not one reference to someone like Fritz Redl, whose classical writings are in my opinion the best in the field.

The book presents concepts involving various degrees of emphasis on the physical, the sociologic, and the psychodynamic. Many pages are filled with one-sided approaches to an understanding of the subject, with a resultant plethora of etiologic claims. Only here and there, particularly in the closing portion of the book, is there consideration of a total field in which most or all of these factors operate. Surely it must be apparent to all that delinquency does not comprise a specific, unvarying clinical entity. Nosological confusion as a result of frequent references to that old classification term psychopathic personality presents an additional problem to the reader. Finally, in concluding these adversely critical remarks, I should like to question the value to this scientific book of the many crude and juvenile full-page drawings which are designed to illustrate some of the descriptive material.

On the positive side, I must strongly recommend some of the excellent individual presentations, as well as the carefully selected illustrative case studies. It is only fair to point out that a reviewer's reactions and bias are determined by his training background. I found the papers of Drs. Lippman, Levy, Spitz, and Peck very illuminating, and among the discussions those of Drs. Wechsler, Lourie, and Gluckman appeared outstanding. There are, of course, many other good and careful studies that are worthy of the reader's consideration. In the closing "synthesis," Dr. Karpman makes the interesting observation that there was a noticeable omission from all of the cases presented of the child's sex life, fantasy life, and dream life. He concludes with the laudable plea that the exponents of each theory and the followers of each discipline must ultimately merge their activities with those of others looking to the achievement of a common goal—the prevention and cure of juvenile deliquency.

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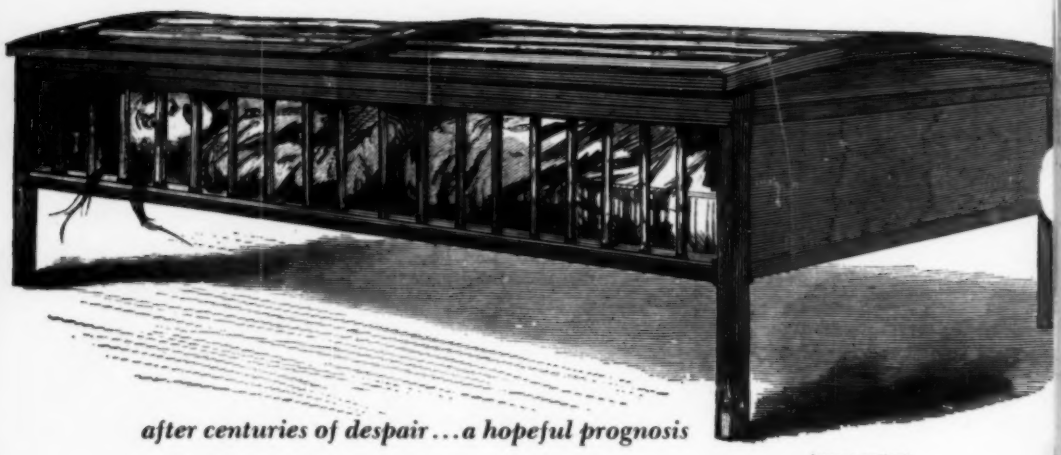

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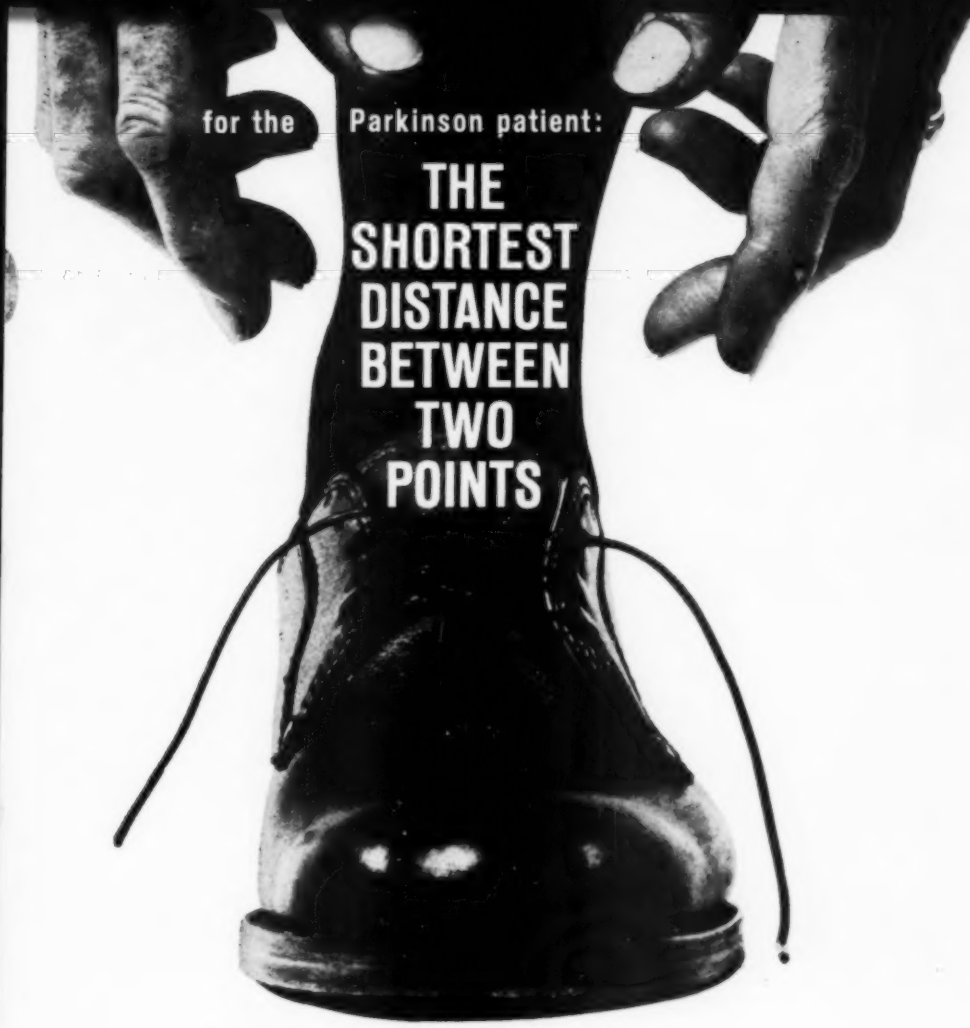

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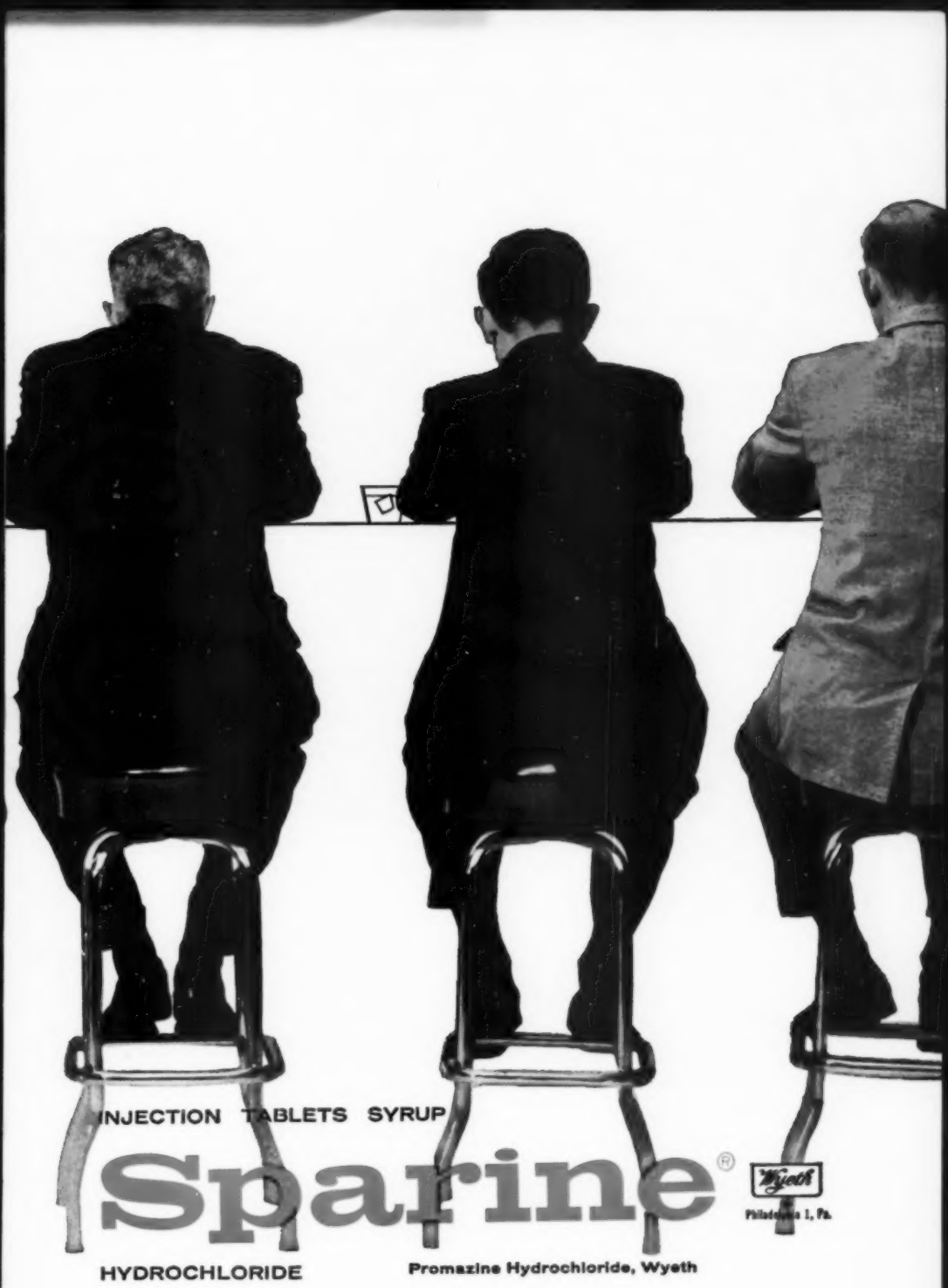
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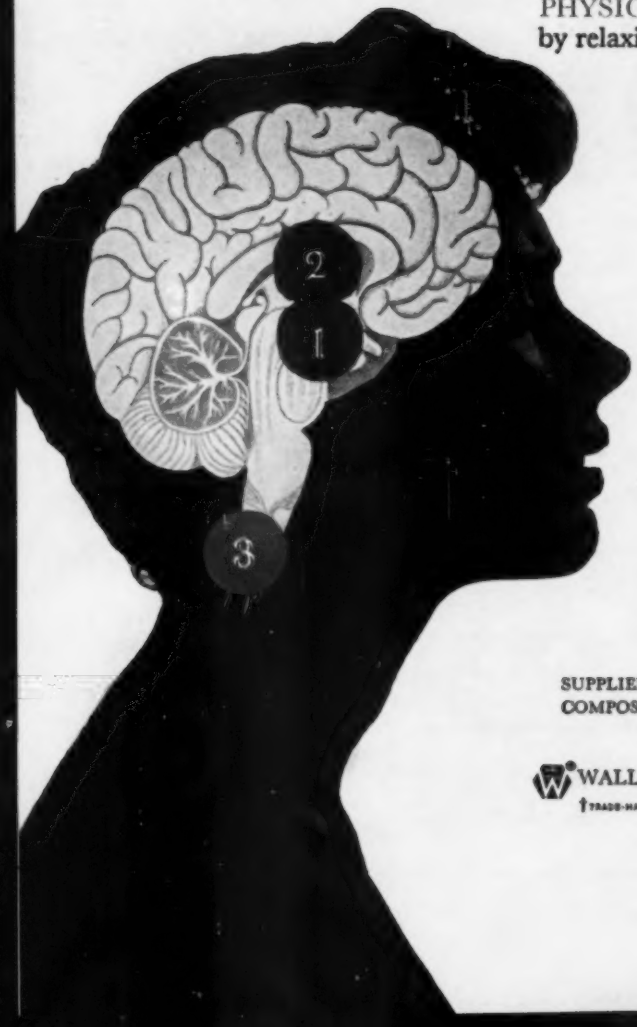

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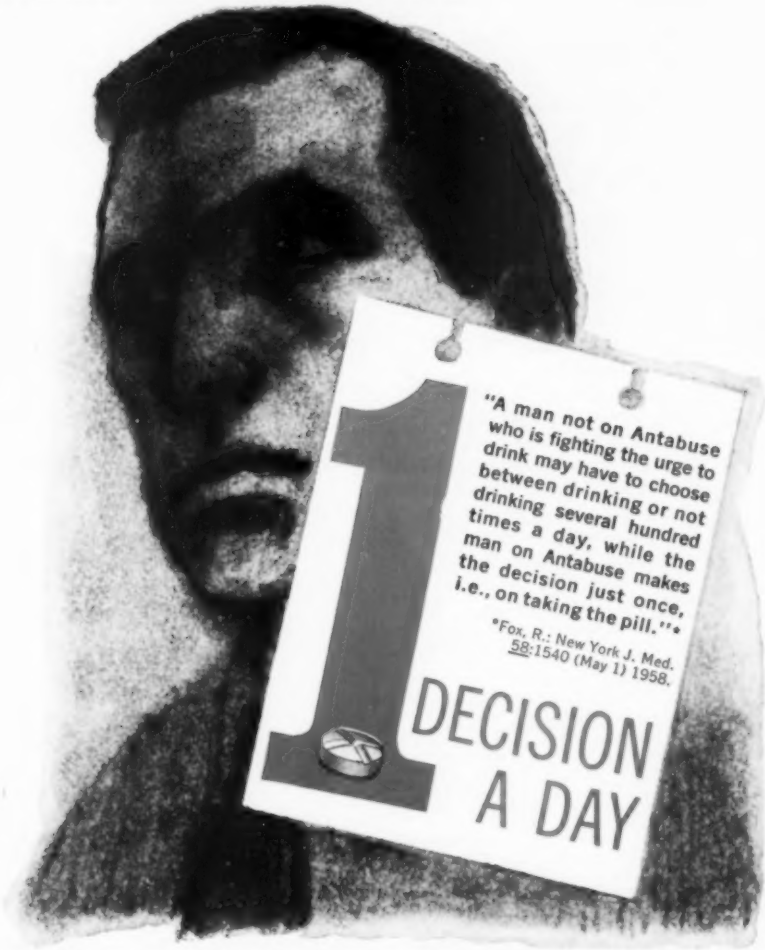
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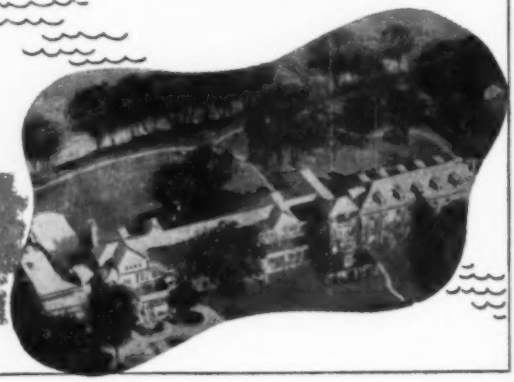

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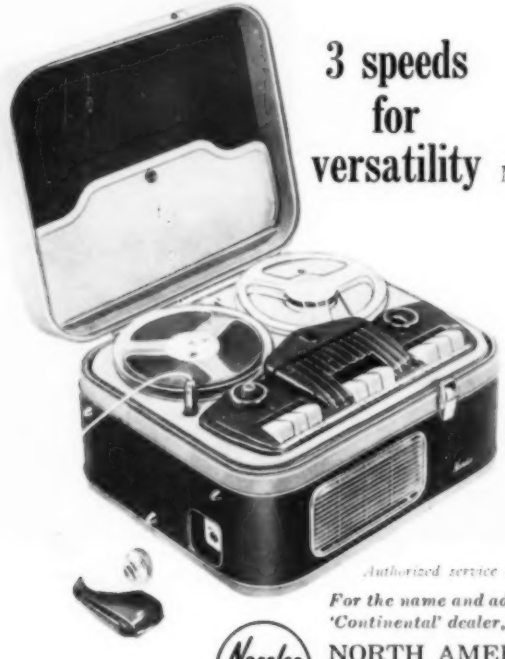

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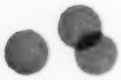

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